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ORIGINAL ARTICLES.

A CASE OF TUMOR OF THE SPINAL CORD.

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CASES of spinal-cord tumor diagnosed, localized and operated upon are of sufficient interest to justify the report of the following case of tumor in the cervical region, successfully diagnosed, localized, and operated upon:

Mrs. S., aged thirty-four years, was referred to me for operation by Dr. Joseph Fraenkel, of this city, to whom I am indebted for the following history as well as for the accurate diagnosis and localization: In September, 1901, a fall into a ditch caused a bruise of the left hip and ankle. On October 23, 1901, she noticed that jolting in the cars caused pain in the left shoulder, at first dull and not very severe. This increased in severity and extended to the other shoulder, with pain in the back of the neck joining the two painful areas. It became shooting, and extended to the chest in knife-like radiations. In November, 1902, weakness of the left upper extremity was noticed in piano-playing, and simultaneously a band-like sensation was felt around the upper abdomen, most marked when she wanted to get up. Soon afterward there was weakness of the left lower extremity. Later, sensation on the right side was impaired. Sphincteric difficulties, not amounting to actual incontinence, have been present for the past month.

On examination in the latter part of January, 1903, the following points were noted: (1) Pain across shoulders and back of neck, slight all the time, worse in the morning and when sitting up without support. No severe shooting pains for the past month. (2) A girdle sensation across the upper abdomen, getting worse. (3) Tingling in hands, like electricity, more marked in left. (4) Difficult motion of the left upper and lower extremities. (5) She is most comfortable lying on the left side; contractions are worse on the right side. (6) Left fingers and toes straighten out and draw up painfully when she tries to sit up.

Furthermore, there is atrophic and flaccid paralysis of the left upper extremity, most marked in the triceps and extensors; spastic paralysis of the left lower extremity, with exaggerated knee-jerk and the presence of ankle clonus and Babinski phenomenon; and a spasmodic stretching of left hand and foot on change of posture.

As to the sensory symptoms, there is paresthesia of the right toes and dissociated sensory disturbances of the right side up to about the fifth thoracic vertebra. At this height and at about the sixth cervical vertebra there is a small band of hyperesthesia. The pain is worse at night. There is sweating of the face, especially at night. There is some tenderness, especially on left lateral pressure, over the fourth thoracic vertebra. The movement of the head backward gives pain in the back of the neck. The deep sensibility is lost in the left upper extremity.

On February 1, 1903, it was observed that the sensation of the left upper extremity (ulnar side) was not very acute, that the temperature sense was disturbed on both sides of the trunk, and that the muscles of the left hand reacted sluggishly to faradic stimulation.

The diagnosis of a tumor within the vertebral canal was made. There was some difference of opinion among those who had seen the patient as to its relation to the cord and membranes. It was thought probable by most that it was extradural, though an intramedullary situation had been suggested by one neurologist. The tumor was localized at the sixth cervical segment.

She was admitted to the Presbyterian Hospital on February 1, 1903, in the condition described above, except that with the progress of the paralysis she was even more helpless, and could not walk, stand, or raise herself up.

Operation.—Cervical laminectomy was done on February 2, under ether anesthesia, with the patient in a prone Sim's position. Median incision from 1½ inch below the external occipital protuberance to the first thoracic spine, deepened to spines of vertebræ, from which and the laminæ the deep tissues and periosteum were reflected by the elevator and knife. The hemorrhage was but moderate and easily controlled by pressure and hot-salt solution on one side, while the opposite side was being reflected. The spines of the fourth to seventh (inclusive) cervical vertebræ were removed by bone-cutting forceps, and the corresponding laminæ by the rongeur, piecemeal. Nothing appeared outside the dura, hence the latter was incised in the median line. The troublesome flow of cerebrospinal fluid from the cranial side of the opening was checked by inserting a small strip of gauze between the dura and the cord. The probe encountered no resistance except on the left side and anteriorly in the region of the sixth cervical lamina. Here the cord bulged backward considerably, and on pressing it to the right a dark bluish prominent area was seen on the left side, extending anteriorly. As this lay in front of the posterior nerve-roots, two of the latter overlying it were cut central to the root ganglia to get at the tumor. The latter was easily distinguished from the cord by its darker

color and harder consistence, and appeared to be covered by a capsule continuous with the pia, which was incised along the curved line where the tumor and the cord adjoined. The tumor, which was also adherent to the inner surface of the dura, was then fairly easily removed entire by blunt dissection, chiefly by the finger. It measured 2 cm. in length, 1¾ cm. in width, and 1¼ cm. in thickness, and was opposite the sixth cervical lamina, overlapping that of the seventh. The dura was sutured with fine gut and the deep parts were brought together by interrupted sutures of heavy gut, a small cigarette drain being introduced at the lower angle as far as the dura.

The patient continued in excellent condition throughout the operation, but on coming out of ether the paralysis was more marked than before, especially on the left side, and for some time after the operation she complained of paresthesia, especially prickling, which was most troublesome in the upper extremities. Profuse perspiration of the head was also very annoying.

The wound healed *per primam,* and it was two weeks or more before any marked improvement was noticed. This consisted in the return of motion, first in the right and then in the left leg. The left arm improved but slightly and slowly. For the first two weeks there was more or less incontinence. When she left for home, six weeks after the operation, sensation was about as before, except that the girdle sensation was not present. Considerable improvement occurred in motion. There was spasticity of both lower extremities.

A month later she was sitting up, could get out of a chair without assistance and walked with a spastic, paretic gait. Considerable paresis of the triceps and the extensors and flexors of the left wrist remained. There was loss of deep sensibility and of the stereognostic sense in the left hand. The paresthesia was but slight. Four months after the operation she walked without assistance with a spastic gait. Disturbances of sensation were less marked. Seven months after the operation the motion in the left upper extremity had also improved considerably. She has continued to improve still further.

Dr. Ewing pronounced the tumor to be an endothelioma.

This case in point of locality, in the cervical region, belongs to the rarest class of spinal-cord tumors. In the series of operated cases collected by Starr, Bruns, Putnam, and others, only one was located in the cervical region. Three such cases have been more recently reported by Oppenheim and Sonnenburg,[1] Henschen and Lennander,[2] Putnam, Krauss and Park.[3] In the above series also the operations on extradural tumors have far outnumbered those on intradural ones, although in fourteen cases recently reported the intradural have far outnumbered the extradural. The former most often allow of an exact diagnosis, and hence a good result from an operation. Hahn,[4] in 1902, reported the ratio of intradural to extradural tumors to be two to one.

In this report it is unnecessary to fully discuss the question of diagnosis, which depends upon a regular and oftentimes slow development that shows itself in an orderly sequence of symptoms due to pressure. The tumors are, as a rule, situated laterally, or laterally and posteriorly, and the pressure is usually first shown in the posterior nerve-roots as vague and then localized neuralgic pains, at first on one side, then on both, finally giving place to diminished sensation when the nerve-roots are destroyed. The symptoms of pressure on the cord itself may not occur until after a long interval (several years), and consist of (1) motor weakness beginning below the extending upward, at first on the side of the tumor, paraplegia only developing later. Then (2) diminution of sensation of all kinds but in different degrees occurs, advancing from below upward and being most pronounced on the side opposite the tumor. Thus Brown-Séquard's paralysis is not infrequently observed in these cases. At the upper border of the hypesthesia there is hyperesthesia in a small circular zone or in spots.

The question of segment diagnosis is of the greatest importance and interest, for on this depends the resort to operative removal. The upper limit of the tumor is the most important to locate, as it has been a common experience since Horsley's first case to find the tumor higher than it was diagnosed. To determine this limit, and the segment or segments involved by the pressure, we have both the motor and sensory symptoms. The sensory are more important than the motor symptoms for this purpose, and those of sensory paralysis (anesthesia, etc.) than those of sensory irritation. In this connection it is important to observe that, according to Sherrington's experiments, each nerve-root is intimately connected with those above and below, and, owing to this and the numerous anastomoses between the nerve-trunks, no one muscle or area of skin is supplied by a single root or segment, but in addition by the segment or root above and below, so that the tumor may be placed two segments higher than the symptoms. Hence Bruns says the operation should be done two segments above the upper level of pain, and, according to Starr, the cord should be exposed four inches higher than the level of the spinal nerve in which the pain is found. Furthermore, the afferent and efferent tracts run in the substance of the cord for some distance, possibly the distance of two segments, before they reach the nerve-center in the gray matter. This fact may further increase the ease of mistakes in locating a tumor lower than it really is.

Jaffe,[5] in reporting an autopsied case, found that the tumor was in the spinal segment which governed the upper limit of the area of diminished sensation or the transition from the diminished to the normal sensation, supplied by the anastomoses of the intact roots above.

Schede,[6] in reporting four cases operated upon, states that the upper end of the tumor was regu-

larly found in the segment which represented the upper border of the disturbance of sensation.

The diagnosis of the nature of the tumor is more difficult than its position. Sarcomata are the most common variety, forming forty-five per cent. according to Bruns's statistics, forty-two per cent. according to Putnam's and Warren's. Extradural growths are more apt to be malignant than intradural. Those progressing rapidly are probably malignant. But in the case of any tumor within the spinal cord, as within the cranial cavity, the prognosis is necessarily fatal if the tumor is left to itself.

Laminectomy in itself is not a very serious operation, and according to McCosh the operative mortality should not be over ten per cent. The fact that resort to operation has generally been delayed too long, until the cord is seriously compromised, bed-sores or cystitis have developed, and the general condition has greatly deteriorated, is responsible for the high mortality. Bruns gives thirty per cent. of recoveries, Krause 56.3 per cent., and in the last twelve cases operated on seventy-five per cent. The prognosis is worse the higher the tumor is situated. Spinal tumors are more often removable than cerebral ones. According to Starr,[7] out of 122 cases the operation should have been feasible in 76, and from pathological reports the tumor could have been removed in seventy-five per cent. Thus these tumors are far more accessible than cerebral tumors.

In considering the *operative treatment* it is well to repeat the statement of Starr and McCosh, that although compression from a tumor of the cord may exist for a long time without softening, no delay should be made for antisyphilitic treatment, for gummata of the cord are rare and the results of delay may be most unfavorable.

As it is, strictly speaking, impossible to assign a certain lesion to a definite segment, but only to an area within three segments, hence, given the highest segment of the cord opposite which the tumor may be situated, we expose this by removing the neural arches of not less than three vertebræ, and any slight inaccuracy of localization may be counterbalanced by the length of the area of the cord exposed. At least this much has to be exposed for the proper manipulations in the removal of the tumor. For operative purposes the surgeon must know the relations of the segments to the vertebræ and really to the spines of the vertebræ, for these are our only superficial landmarks, and in the cervical region even these fail us. These relations of the cord segments to the vertebral spines are given in various tables with a fair degree of accuracy, though if the considerations already given do not suffice to explain the frequency of the tumor being found higher than located, some inaccuracy in these tables or even an individual difference may account for it.

As to the technic, even in the deep wound in the cervical region hemorrhage was not serious and was easily controlled. It is a matter of individual preference what one uses for the removal of the laminæ. Cutting forceps for the spines and rongeur forceps for the laminæ I have found effective. Schede recommends the Gigli saw in the cervical region to divide the laminæ. Uhtoff's osteoplastic resection is to be condemned. It prolongs and complicates the operation, and the laminæ and spines do not serve to carry any of the weight. Hence no support is necessary after the operation.

Sonnenberg[1] has reported one case of a tumor in the cervical region of the cord in which he attributed the fatal result to the use of this method of temporary resection.

The flow of cerebrospinal fluid may be a great inconvenience in the removal of the tumor. In my case, a little sterile gauze inserted behind the cord between it and the dura at the upper or cephalic end of the incision checked this flow very satisfactorily. For the same purpose Schede has used the circular constriction of the dural sac above and below the incision by a silk or elastic ligature, as proposed by Sick.

The tumor is usually readily shelled out by blunt dissection. In the above case two posterior nerve-roots had to be divided to get at it.

The improvement, as in the case reported, may not commence until two weeks or more after the operation. It appears first and is most complete on the side where the symptoms last appeared. The symptoms continue to improve for a considerable time, but some permanent effects of the pressure may persist from destruction of the cord on the side of the tumor, depending on the size of the tumor and the length of time it has exerted pressure. For this reason alone it cannot be too strongly urged that suitable cases of tumor of the spinal cord be operated upon as soon as it is possible to localize them.

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THE NEED OF EFFICIENT PUBLIC HEALTH WORK IN THE SUBURBS.[1]

BY GEORGE A. SOPER, PH.D.,
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Before attempting to form an idea of the need of public health work in the suburban districts of New York it may be well to picture to ourselves the principal types of suburbs, and agree upon some of the leading features of suburban life which make a strict surveillance of public health there desirable.

The word "suburban" carries to some minds a pleasing picture of quiet country homes in pretty villages within easy reach of the city. The streets are smoothly paved, and shaded in summer, and there are lawns about the houses which give an

1 Abstract of a paper read before the Municipal Club of Brooklyn, N. Y.

air of ease and order to the place. Many of the dwellings are admirably built for the admission of light and air and relatively high standards of hygiene prevail within them. There are about forty towns and villages of this kind within a half hour's journey of Manhattan.

Notwithstanding the orderly and agreeable appearance of many of the environs of this type, the machinery for guarding public health in them is not always highly developed. The members of the boards of health usually serve without pay. The boards are often made up of men not one of whom has had any training in public health work.

It is for this reason that many suburban towns are not provided with as perfect sanitary arrangements as they should have. Water supplies and sewerage systems are occasionally defective. It is unusual to find the milk supplies well regulated. Disinfection and isolation for the prevention of contagious diseases rarely receives scientific attention. Hospital accommodations adequate to the needs of the population are seldom provided. The most important detail of all public health work, the registration of cases of infectious diseases, births, marriages and deaths, is often so much neglected that it is impossible to tell from the records whether the community is enjoying its proper share of health.

In some suburbs an attempt is made to attend to public health work in a modern way, but the annual reports of the majority show that there is much halfheartedness and lack of skill in the effort. The suburbs in which thoroughly competent public health work is performed are conspicuously few.

Yet a wise and competent administration of public health matters is much needed in residence suburbs. Many are, in reality, health resorts. People live in them for the rest and healthfulness which they are supposed to afford.

If there was no other reason why a strict surveillance of public health were required the fact that most of these residence communities are growing rapidly would afford one. It is as true with respect to communities as it is with individuals, that the period of growth and adolescence is a period of unusual danger to health. Our residence villages and towns are always outgrowing their sanitary arrangements. For example, the sewer which was big enough for a population of five thousand a dozen years ago is inadequate for seven thousand who need to use it to-day.

To some the word suburb does not call to mind an attractive picture. It is remembered that between the beautiful residence suburbs and the city lies a district which is anything but pleasant: where the built-up sections end and the country farms begin. It is a region largely given over to what are called by public health authorities the "offensive trades," and the city on the other hand, and the country on the other, seem bent upon making it as offensive as possible. Here are slaughter houses, oil yards, fertilizer plants, chemical works and dumping places for the miscellaneous filth of the city.

The location of offensive trades in the suburbs is a relic of the times when civilization knew little about sanitary science. In those days the pollution of the atmosphere with foul odors was considered inevitable. To-day we know that these odors may be largely prevented and that it is often business economy to do so.

Such dwellings as exist on the outskirts of the city are the homes of poor people. The houses consist of meanly-built frame structures, packed on small lots and surrounded by barren wastes. Public works for the development of the city have left sunken lots on every hand. Some of the depressions are filled with green, slimy water. Here mosquitoes breed and carry malaria.

Life, as seen at the edges of the city, is often as squalid as anything to be found in the most overcrowded tenements. In fact, existence here is sometimes less healthful than life in the giant tenements in town. The dwellers in the tenements have at least the benefits of a public water supply, a sewerage system and some share of board of health control, while the people on the outskirts of the city are apt to be left to shift for themselves. Inside, the houses are often filthy, unventilated and overcrowded. Outside, the back yards contain all the sanitary conveniences which the people think they need. Here is a well and a privy; here are thrown ashes and garbage and house slops. Chickens, goats, etc., are the scavengers.

Between the immediate squalid outskirts and the pleasing residence suburbs of the city lies a large tract of country which is being gradually transformed. The city has extended its streets and avenues partly through these districts, but sewers and water works are not yet built and board of health work is unknown. The progress of municipal improvements has not been an unqualified advantage. On every hand the natural drainage of the land has been interfered with. Acres of sunken lots are to be seen and acres of stagnant water. Years must pass before these lands are reclaimed by their owners. Meanwhile the region is fairly certain to gain an evil reputation for malaria. Malaria is indeed a common disease of most suburbs.

A favorite occupation in this class of suburb is the business of keping cows for milk. In the vicinity of New York are many so-called dairies filled with cows which are imprisoned in their stables the year round. Few people who see in our city or suburban streets immaculately painted milk wagons bearing such legends as "Sweet Clover Farm" or "Brookside Dairy," for instance, have any idea of the filth and squalor from which many of these wagons draw their supplies. How many people take the trouble to learn where their milk comes from, and what pains are taken to keep it pure?

Having made a brief survey of some of the conditions which render strict attention to public

health matters desirable in the suburbs, we are in a position to group under a few general heads the difficulties in the way of protecting health and point out the remedy.

First in importance among the difficulties I should place the want of knowledge which everywhere exists on the subject of hygiene. In the better residence suburbs we have seen that public sanitary questions are often neglected. In the squalid outskirts of the city private and domestic hygiene are practically unknown. Hygiene is a neglected factor in education, as has been pointed out by President Eliot, of Harvard. Children, as a rule, do not study it at school, and in later life seldom acquire any knowledge of it beyond that gained by costly observation and experience.

Nor are our doctors always qualified to act as expert advisers with respect to public health measures. Few physicians have studied hygiene and fewer yet of forty years of age or more could have studied its foundation science, bacteriology, in their college courses, for it has not so long been taught.

Second in importance as an obstacle to protecting public health, I should place the difficulty of enforcing sanitary laws. If the suburb is not a part of the city the authority of the health board is apt to be inadequately understood by the board itself, as well as by the public. The authority of the health board is in reality very great. No more power is given by the statutes to any department of local government than is conferred upon boards of health for the proper discharge of their duties.

Thirdly, a want of concerted action among different departments of the local government accounts for some of the difficulties in the way of protecting public health in the suburbs. There is not infrequently a tendency for each bureau to pursue its labors without regard to the activities of the rest, and this often leads to difficulty. For example, it is incongruous for a department of health to declare that the private dumping of garbage or swill is a nuisance, if at the same time city scavengers are permitted to tip their refuse in sunken lots.

A remedy is available for the difficulties of caring for public health in the suburbs. Be they aristocratic villages or mere squalid outposts of the city, energy is needed to discover and correct the sanitary conditions. Get all the help possible!

Health authorities are often embarrassed by the small number of paid employees under their direction, but they generally receive an important amount of assistance which is not paid for. All physicians are called upon by law to supply information concerning sickness, deaths and births for the information of the health department. In a similar way ministers are required to report marriages. Citizens who are annoyed by unsanitary conditions in their neighborhood, commonly lodge complaints.

Extend this cooperation. Let the character and amount of the assistance be increased; let the personnel of the boards of health be improved; let the appropriations for the maintenance of the boards be adequate; establish laboratories to test water and milk; inspect the dairies and the water shed. Above all, engage a competent health officer to execute the orders of the board.

See to it that the suburb is healthful and that the public has the reasons for knowing it to be so. Publish a monthly report and state the facts with regard to the prevalence of preventable diseases, if they are prevalent.

A policy of indifference or a disposition to hide the facts may be fatal. It has often led to a great epidemic.

As soon as possible, see to it that that universal nuisance, the garbage question, is solved in a sane and sanitary manner. As certainly as garbage and ashes must be disposed of there is an orderly and inoffensive way to dispose of them. There is absolutely no warrant for polluting the air and making a suburb or any part thereof a disgusting dumping place for refuse.

Begin to collect a library on sanitary topics. Whether you are a member of the board of health or not, it is important that you should know when and where cases of transmissible sickness are likely to occur, how infectious diseases may be communicated and how they may be prevented. It is desirable that the principles of disinfection, isolation, bacterial cleanliness and domestic hygiene should be generally known and applied. The members of the board of health ought to be experts in these matters.

Efficient work on the part of the board of health will be certain to bring a rich reward. Life and health will be more secure. The suburb will be cleaner morally. Higher standards of municipal order will prevail. Not the least reward will be the business advantage which will come from the prosecution of a strict and skilful public health campaign. Intelligent people will be attracted to the suburb. From a purely mercenary standpoint health work pays.

A CONTRIBUTION TO CYTODIAGNOSIS IN PLEURAL EFFUSIONS, WITH ESPECIAL REFERENCE TO THE TUBERCULOUS FORM.

BY HERBERT SWIFT CARTER, M.D.,
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Cytodiagnosis of pleural effusions is a subject which, until very recently, has been entirely ignored, although the cells of the blood, and those found in exudates from some other portions of the body, have long been studied and discussed. The extreme importance, to the patient, of a positive diagnosis in suspected tuberculosis anywhere, can scarcely be overestimated, and, as a rule, the earlier diagnosis the more favorable the result; hence, when a patient with a pleural effusion is presented, a practically positive diagnosis of its etiology, *i.e.*, whether tuberculous or

not, offers the best chance for the individual's proper care.

To emphasize this the more, according to Cabot[1] fifteen per cent. of 152 cases of pleurisy with effusion developed demonstrable tuberculosis of lung or bone, in three per cent. of which the tuberculosis manifested itself within two years of the date of the effusion. Since he used no positive method for determining which were tuberculous and which were non-tuberculous, undoubtedly a considerable number of the latter were included among the observations, so that, proportionately, the number of cases which developed tuberculosis would probably be considerably greater had the non-tuberculous cases been positively excluded from the series.

Widal and Ravant[2] were the first to call attention to a lymphocytosis in the so-called idiopathic pleurisies, but their conclusions, so far as the establishment of a positive diagnosis of their tuberculous origin, are incomplete, as they took into account only the differential cell count, while as a matter of fact a more complete morphological examination of the effusion is necessary; and there are other diagnostic points, without which one cannot make a diagnosis of tuberculous pleurisy, especially the *specific gravity*, *fibrin*, and *albumin content*, all of which are of extreme importance. There are many cases in which the lymphocytes predominate, although they are in nowise tuberculous, as shown by Series D.

Reasoning also by analogy, Hand[3] found that he was able to demonstrate tubercle bacilli in the spinal fluid from cases of tuberculous meningitis, in practically every case. In these he also found a lymphocytosis, but in addition an albumin content as high as nine per cent., whereas the normal spinal fluid contains but about five-tenths per cent. and that of the ordinary meningitis four to five per cent.

The fluid from two cases of proven tuberculous peritonitis was also examined and showed a lymphocytosis, one of 98.6 per cent., another of ninety-nine per cent., each with high fibrin and albumin percentages.

Runeberg[4] long ago demonstrated the great difference in the albumin content of exudates and transudates, the latter having but a small percentage as compared with the former; while it is a matter of common experience that the specific gravity of exudates exceeds that of transudates, so that one can almost positively state that a pleural fluid with a specific gravity over 1010 or 1012 is exudative, while that below is the result of transudation. Hence it is only by a combination of morphological data that we are able to arrive at a practically positive diagnosis of tuberculous pleurisy, without animal inoculations, and that this can be done with what seems reasonable certainty, is the object of these observations.

Animal injections are, above all, too slow, and much valuable time is lost to the patient in waiting for results, three weeks being about the shortest time in which tubercles may be demonstrated, and then not with certainty, while guinea-pigs survive injections of tuberculous pleural fluid two or three months, when one often finds the tubercles well developed and cheesy. Taken in connection with the difficulties of the process and the failures, it is too uncertain to ever become generally useful, while a morphological examination can be easily and rapidly made and the results, for the various forms of pleural effusion, are nearly uniformly constant.

The advantage, too, of differentiating *statim* the exudates due to tubercle bacilli and pneumococci by this morphological examination is evident, for the majority of cases of each begin in much the same way, chill, pain in the side, and a high temperature, often 103° to 104° F., and when one has to go entirely by the history it is often quite impossible to say whether the patient has had an initial pneumonia with subsequent fluid, or whether it has been acute tuberculous pleurisy from the start, *e.g.*, Series B, Case XIV. Many samples of fluid came marked with a clinical diagnosis which proved on further examination to be wrong.

By reference to the tabulated cases one can see that only three of the positively tuberculous, and two of the probably tuberculous cases were at all subject to rheumatism, and it is to be doubted if the rheumatic poison ever gives a true pleural effusion, although this is a time-honored theory, and there is nothing theoretically against such a possibility, Dopter[5] going so far as to describe the characteristics of rheumatic pleurisy; but Wolf[6] says that what were previously described as such are now known to be tuberculous, in all probability; and certainly this series of cases seems to bear out that statement most emphatically.

True cases of septic pleurisies (empyemata) are of no interest from a cytodiagnostic point of view, for, like all pus, the polymorphonuclears predominate almost to the exclusion of all other forms, and the etiological diagnosis can, so far as we know, be made only by cultures.

Method of Morphological Examination of Pleural Fluids.

Fluids should be examined as promptly after aspiration as possible, immediately after, while still warm, and before the fibrin clot forms, if animal inoculations are to be made; for judging from Hand's experience with spinal fluids, the tubercle bacilli, or their spores, are entangled in the fibrin, as he was able to find bacilli, in his cases, only in it and never in the fluid, no matter how treated. The color, turbidity, specific gravity, reaction, and relative albumin content are then obtained. The latter is quickly done by adding strong nitric acid, when a large amount of albumin comes down in the form of thick, curdy clots; a small amount either as a light flocculent precipitate or a simple turbidity. When the fluid cools, the presence or absence of a fibrin clot is noted. This is a gelatinous mass when seen

fresh and undisturbed, but on agitation of the fluid collects into a small opaque mass of more dense fibrin resembling that seen after whipping fresh blood.

The amount of fluid used successfully in inoculating guinea-pigs varied from 2 to 9 c.c., and the injection was made subcutaneously into the anterior chest-wall, under conditions as nearly aseptic as practicable.

To complete the examination, a conical tubeful of the fluid is then rapidly centrifuged for five minutes and the sediment stained on a coverslip with Jenner's differential stain. A differential count is then made of the leucocytes; the endothelial cells, erythrocytes and general characters noted. In no instance were tubercle bacilli found in the fluid, although about one-half of the cases were examined for them. All the pleural fluids were either alkaline or neutral reaction, usually strong alkaline.*

Series A.

Observations on cases of pleuritic effusion of proven tuberculous origin.

Case I.—Tapped twice. Thirty-two ounces. Highest temperature, 104° F.; average, 102° F. Fluid. Specific gravity, 1024. Fibrin, moderately large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	92
Large mononuclears	7.2
Polymorphonuclears	.8
Eosinophiles	.0
	100.0

Result of guinea-pig inoculation: General tuberculosis in spleen, liver, lungs, glands. Tubercle bacilli in abundance.

Case II.—Tapped once. Thirty ounces. Highest temperature, 104.5° F.; average, 101.2° F. Fluid. Moderately large amount of fibrin.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
Polymorphonuclears	0
Eosinophiles	0
	100

Result of guinea-pig inoculation: Tubercles in spleen, liver, axillary and peritoneal glands; cheesy, tubercle bacilli in abundance.

Case III.—Tapped twice. Twenty-three ounces. Highest temperature, 105.5° F.; average, 101.5° F. Fluid. Specific gravity, 1012. Fibrin, moderately large amount. Albumin, large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	90
Large mononuclears	1.7
Polymorphonuclears	7.7
Eosinophiles	.3
Basophiles	.3
	100.0

Result of autopsy: Acute miliary tuberculosis of both lungs, tubercular peritonitis.

Case IV.—Tapped twice. Sixty ounces. Highest temperature, 101° F.; average, 99.5° F. Fluid. Specific gravity, 1019. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Result of autopsy: Both pleuræ thickened; fresh tubercles on left pleura; old tuberculous foci with cicatrization on right.

Case V.—Tapped once. Twenty-five ounces. Highest temperature, 104° F.; average, 101° F. Fluid. Specific gravity, 1014. Fibrin, large amount. Albumin, large amount.

Lymphocytosis on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
	100

Result of guinea-pig inoculation: Scattered miliary tubercles throughout both lungs and spleen; cheesy axillary glands.

Result of autopsy on patient: Miliary tubercles over both pleuræ and in both lungs; tuberculous peritonitis and colitis.

Case VI.—Tapped once. Forty-eight ounces. Highest temperature, 100.5° F.; average, 98.4° F. Fluid. Specific gravity, 1022. Fibrin, moderate amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	97.5
Large mononuclears	2.5
	100.0

Result of autopsy: Miliary tubercles on right pleura and scattered throughout the right lung. Had articular rheumatism five years ago.

Case VII.—Tapped twice. Forty-five ounces. Fluid. Specific gravity, 1022. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.4
Large mononuclears	.3
Polymorphonuclears	1.3
	100.0

Result of autopsy: Miliary tubercles on right pleura and in right lung; extreme arteriosclerosis with cardiac hypertrophy and dilatation; chronic myocarditis; chronic diffuse nephritis.

* It will be seen in looking over the cases that sometimes there is no mention of the specific gravity or the fibrin or the albumin content. This is owing to the fact that in some of the earlier cases their importance was not recognized and the results were originally to be based on subsequent histories of the cases after two to five years, so that sometimes only a differential count was made. The later cases wre all routinely examined as detailed above.

Case VIII.—Tapped once. Twenty-five ounces. Highest temperature, 102° F.; average, 100.4° F. Fluid. Specific gravity, 1022. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96
Large mononuclears	1
Polymorphonuclears	3
	100

Result of guinea-pig inoculation showed tuberculosis of lungs.

Case IX.—Tapped once. Forty ounces. Highest temperature, 104° F.; average, 101.5° F. Fluid. Specific gravity, 1012. Fibrin, large amount. Albumin, large amount.

Lymphocytosis, on differential count:

Small lymphocytes	100
Large mononuclears	0
	100

Result of autopsy: Fluid in both pleural sacs; acute miliary tuberculosis, both lungs; chronic endocarditis, with marked cardiac hypertrophy and dilatation. Had articular rheumatism two years ago.

Case X.—Tapped three times. Forty-three ounces. Highest temperature, 104° F.; average, 101.1° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Result of guinea-pig inoculation: Miliary tuberculosis of lungs and liver.

In looking over this series one is struck by the following facts: That so far as examined, they show a fluid with a specific gravity over 1012, ranging from 1012 to 1024, with an average of 1018.3, a large or moderately large fibrin clot, and a large amount of albumin, besides a lymphocytosis from ninety to one hundred per cent., averaging 96.9 per cent. (Here and elsewhere a lymphocytosis refers to the small lymphocytes.)

The day of disease on which these cases were tapped varied from the fifth to the forty-second as follows: Fifth, sixth, seventh, thirteenth, fourteenth, sixteenth, twenty-first, twenty-eighth, thirty-seventh, and forty-second, but not even in those examined during the first week was there seen a polymorphonuclear leucocytosis, as is said often to be the case by Guilland,[7] Wolf,[6] Barjou and Cade[8] and Utichelis[9]. The nearest approach to this was seen in Case X, Series B. It would seem, however, from the observations of others that a high polymorphonuclear leucocytosis might be found early, and subsequent differential counts be necessary to clear the diagnosis, although comparatively few cases need tapping much before the latter part of the first week, unless the fluid accumulates very rapidly.

The relative number of cells in the fluid appears of no importance, or at least their importance, if any, is not known, for in this series some cases showed a very large number of cells, and in others it was necessary to count an entire coverslip in order to get fifty or a hundred for a diagnosis; this too, after centrifugating. A point of interest is, that, so far as noted, some of the cases showed the presence of few endothelial cells, and others of many, which is quite at variance with Dopter's[5] statement that "in tuberculous pleurisy, we find particularly an absence of endothelial cells." Nor are their presence a positive indication of an effusion of long duration, as they were found in abundance in Case XI on the sixth day.

The temperature curve in these cases of proven tuberculous pleurisy is also of interest compared with the probably tuberculous and postpneumonic cases, the highest temperature recorded being 105.5° F., while the average highest was 103.2° F. The average range from admission to discharge being 100.7° F. (see Table of Averages), hence it is seen that the true tuberculous cases show a tendency to high temperatures, particularly early in the disease, or until the fluid is at least in part removed.

The color of the fluids varied between a straw, amber, greenish, yellow or reddish tinge, the highest recorded amount of fluid obtained being forty-eight ounces, lowest twenty-three ounces, with an average of 32.6 ounces.

Two cases of especial value from the point of view of differential diagnosis, were numbers VII and IX.

Number VII was that of an old colored man with extreme arteriosclerosis, myocarditis and chronic nephritis, who from time to time had excessive attacks of contraction of the arteries, with asthma. He got up fluid in one side of his chest, and at first the natural supposition was that it was a transudate, as he had been gradually failing. However, a diagnosis of tuberculous pleurisy was made after a morphological examination of the fluid, as it showed the typical earmarks of a tuberculous effusion, and this was confirmed at autopsy, ten days later. Case IX was somewhat similar, although a marked endocarditis with failing compensation was the occasion for seeking hospital treatment. The mitral and aortic valves were much damaged, and the fluid which collected in both pleural sacs was supposed to be the result of his impared circulation. Examination of the fluid showed it to be a tuberculous process, this also being confirmed by autopsy.

Series B.

Observation on Cases of Pleuritic Effusion of Probable Tuberculous Origin.

Case I.—Tapped three times. Ninety-two ounces. Highest temperature, 102.4° F.; average, 100.8° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.8
Large mononuclears	.7
Polymorphonuclears	.5
	100.0

Tubercle bacilli found in sputum.

Case II.—Tapped twice. Nineteen ounces. Highest temperature (in hospital twenty-five days after onset), 101.8° F.; average, 100° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98
Large mononuclears	2
	100

Case III.—Tapped twice. Thirty-four ounces. Highest temperature, 104.6° F.; average, 100.5° F. Fluid fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	95
Large mononuclears	2
Polymorphonuclears	3
	100

Gave good reaction to tuberculin, 2 mgr.

Case IV.—Tapped twice. Fifty ounces. Highest temperature, 102.8° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.3
Large mononuclears	.3
Polymorphonuclears	1.4
Eosinophiles	.0
	100.0

Râles at right apex. Severe hemoptysis. Had articular rheumatism fifteen years ago. Gave good reaction to tuberculin, 2 mgr.

Case V.—Tapped twice. Forty-two ounces. Highest temperature, 102.2°F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.6
Large mononuclears	1.2
Polymorphonuclears	.0
Eosinophiles	.2
	100.0

Gave good reaction to tuberculin, 2 mgr.

Case VI.—Tapped once. Eighteen ounces. Highest temperature, 103.8° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	91.6
Large mononuclears	8.4
	100.0

Case VII.—Tapped four times. One hundred and fifty-two ounces. Highest temperature, 103.8° F.; average, 101.8° F. Fluid. Specific gravity, 1020. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96
Large mononuclears	2
Polymorphonuclears	2
	100

Case VIII.—Tapped three times. Fifty-six ounces. Highest temperature, 103.4° F.; average, 99.5° F. Fluid. Specific gravity, 1024. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100
Large mononuclears	0
	100

Case IX.—Tapped four times. One hundred and eighty-nine ounces. Highest temperature, 104.2° F.; average, 100.7° F. Fluid. Specific gravity, 1022. Fibrin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Patient had bloody expectoration.

Case X.—Tapped twice. Fifty-three ounces. Highest temperature, 103.6° F.; average, 102° F. Fluid. Specific gravity, 1018. Fibrin, large amount.

Lymphocytosis, on differential count:

		Per Cent.
On the eleventh day.	Small lymphocytes	65.5
	Polymorphonuclears	34.5
		100.0

		Per Cent.
On the sixteenth day.	Small lymphocytes	97
	Polymorphonuclears	3
		100

Case XI.—Tapped once. About forty ounces. Highest temperature, 102° F.; average, 100° F. Fluid. Specific gravity, 1020. Fibrin and albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Case XII.—Tapped once. Twenty-three ounces. Highest temperature, 103.5° F.; average, 100.7° F. Fluid. Specific gravity, 1.018. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	98.00
Large mononuclears	1.33
Polymorphonuclears	.67
	100.00

Case XIII.—Tapped once. Fifty-two ounces. (Fluid in chest on discharge.) Highest temperature, 103°F.; average, 100.6° F. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	100

Patient has night sweats.

Case XIV.—Tapped once. Ten ounces. Highest temperature, 103° F.; average, 99.5° F. Specific gravity, 1016. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	94
Large mononuclears	0
Polymorphonuclears	6
	100

Sent to laboratory for diagnosis.

Case XV.—Tapped once. Six ounces. Highest temperature, 102.2° F.; average, 99.6° F. Fluid. Specific gravity, 1015. Fibrin, moderate amount; albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	84
Large mononuclears	3
Polymorphonuclears	10
Eosinophiles	0
Basophiles	3
	100

Gave good reaction to tuberculin, 4 mgr.

Case XVI.—Tapped twice. Eighty-nine ounces. Highest temperature, 104.5° F.; average, 101.5° F. Fluid. Specific gravity, 1016. Fibrin and albumin, large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	94.5
Large mononuclears	0.0
Polymorphonuclears	5.5
	100.0

Fine râles at right apex. Tubercle bacilli in sputum.

Case XVII.—Tapped once. Fifty-five ounces. Highest temperature, 102.5° F.; average, 100.2° F. Fluid. Specific gravity, 1024; albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	95.0
Large mononuclears	4.0
Basophiles	1.0
	100.0

Fine râles at both apices of lungs. Moderate reaction to tuberculin, 2 mgr.

Case XVIII.—Tapped three times. One hundred ounces. Highest temperature, 105° F.; average, 100° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	96.5
Large mononuclears	0.0
Polymorphonuclears	3.5
	100.0

Had articular rheumatism five years ago.

Case XIX.—Tapped twice. Sixty-two ounces. Highest temperature, 101.8° F.; average, 100.2° F. Fluid. Fibrin and albumin in large amount.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	91.5
Large mononuclears	5.0
Polymorphonuclears	3.5
	100.0

Fine crepitant râles at left apex persisting for months.

Case XX.—Tapped four times. One hundred and fifty-nine ounces. Temperature about normal. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount, reddish color.

Lymphocytosis, on differential count:

	Per Cent.
Small lymphocytes	87.0
Large mononuclears	.5
Polymorphonuclears	12.5
	100.0

Although the patient had a chronic endocarditis, the effusion was probably a true exudation on account of its specific gravity, fibrin, and albumin content. Had articular rheumatism twenty years ago.

In the cases which are included among those of probable tuberculous origin, one sees the marked similarity to those of proven tuberculosis, in the specific gravity, albumin, and fibrin content and in that each has a lymphocytosis. While some of them have points in their physical examination of the lungs—sputum, tuberculin reaction—which stamp the effusion as almost surely of tuberculous origin, *e.g.* Cases I, IV, IX, XVI, XVII, the others are included in the series on account of their conforming more or less closely in the morphological examination of the fluid to those known to be tuberculous. (Series A.)

The specific gravity of these effusions, where noted, ranged from 1015 to 1024, with an average of 1019.4, as compared with 1018.3 of Series A, a very slight difference. The fibrin and albumin content, wherever noted, was large, as was the case also in Series A; while the small lymphocytes ran from 84 to 100 per cent., (omitting Case X, which showed 34.5 per cent. of polymorphonuclears on the eleventh day, while the small lymphocytes went up to 97 per cent. on the sixteenth day), with an average of 96.1 per cent. as compared with 96.9 per cent. of Series A.

The amount of fluid withdrawn was from 6 to 159 ounces, averaging 53.2 ounces, which is a somewhat higher quantity as compared with the cases of proved tuberculosis.

So far as temperature is concerned in these cases, we find it from 105° F. to normal, but with an average highest temperature of 102.9° F., as compared with 103.2° of Series A, the average temperature for all from admission to discharge being 100.4°, or almost exactly that of the tuberculous cases. (See Table of Comparisons.)

Following these comparisons it is easily seen that the diagnostic points of Series A and B are for the most part almost identical, and offer good ground for making a fairly positive diagnosis of tuberculous pleurisy in the cases of Series B. An odd fact is that in those cases in which the tuberculous pleurisy was not terminal, the patients were in almost every instance attacked while in apparently robust health, many, if not quite the majority of them, never having been ill before.

Series C.

Observations of serous pleuritic effusions following lobar pneumonia.

Case I.—Tapped once. Thirty ounces. Ten days after defervescence. Highest temperature, 100.5° F.; average, 99° F. Fluid, Fibrin, large amount, clear amber. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	58.6
Small lymphocytes	36.4
Large mononuclears	5.0
	100.0

Case II.—Tapped twice. Ten ounces. Highest temperature, 102° F.; average, 100° F. Fluid. Specific gravity, 1016. Albumin in large amount, straw amber. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	75.6
Small lymphocytes	23.4
Eosinophiles	1.0
	100.0

Tapped seven days after end of pneumonia; temperature continued moderately elevated.

Case III.—Tapped once. Five ounces. Highest temperature, 100.2° F.; average, 99.5° F. Fluid. Specific gravity, 1016. Fibrin and albumin in large amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	67.5
Small lymphocytes	28.5
Large mononuclears	4.0
	100.0

Tapped six days after defervescence; fluid looked like slightly diluted blood.

Case IV.—Tapped twice. Six ounces. Highest temperature, 105.2° F.; average, 103.2° F. Fluid. Specific gravity, 1015. Fibrin, rather curdy, albumin fairly heavy amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	92.5
Small lymphocytes	.5
Large mononuclears	7.0
	100.0

Fluid accumulated during course of long pneumonia.

Case V.—Fluid from operation unknown amount, bloody character. Highest temperature, 101.5° F.; average, 100.5° F. Fluid contained a fairly large blood clot. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	78.0
Small lymphocytes	11.5
Large mononuclears	10.5
	100.0

Operation performed supposing it an empyema; no morphological examination preceded. Microscopical examination showed diplococci which looked like pneumococci. No cultures made. Patient died. (Child.) No autopsy.

Case VI.—Tapped once. Thirty ounces. Highest temperature, 104° F.; average, 101.5° F. Fluid, green amber. Specific gravity, 1019. Fibrin and albumin in large amount. Polymorphonuclears in excess.

	Per Cent.
Polymorphonuclears	71.2
Small lymphocytes	28.8
Large mononuclears	0.0
	100.0

Tapped on the fourth day of pneumonia; signs of consolidation persisted after the fluid was withdrawn and defervescence came normally.

This series is given as illustrating the points in differential diagnosis from the tuberculous cases, which is accomplished principally by the differential cell count; as the color, specific gravity, albumin and fibrin content are much the same as one finds in the cases of tuberculous origin, either proven or probable. When the differential cell counts are examined and compared with the other classes one sees an invariable polymorphonuclear leucocytosis ranging from 58.6 per cent. to 92.5 per cent., with an average of 71.7 per cent., even though the serum is often clear and corresponds in other respects to the tuberculous effusion.

So far as the development of an empyema is concerned, no prognostic value could be attached to the percentage of polymorphonuclears, as none of these cases developed it.

In examining the temperature curves it is seen that when an effusion developed during the course of a pneumonia the temperature was that belonging to the original disease, and was high, as in Case IV and VI; leaving these out of account we have a highest temperature from 100.2° F. to 102° F., with an average highest temperature of 101.5° F., which is much lower than that of Series A and B (see table); while the average

for the entire series (again with the same two exceptions) is seen to be 99.7 per cent., which is also lower than that of either of the two preceding classes. While these cases are too few in number to formulate positive conclusions from, still, it seems pretty certain that cases of pneumonic serous effusion have a lower average temperature than tuberculous cases, although there are exceptions at both ends of the scale.

The amount of fluid withdrawn, while not positively of diagnostic value, is of interest by comparison. The amount varied from five to thirty ounces, with an average of 18.5 ounces, or much below that of the tuberculous cases.

Several samples of fluid were received with the diagnosis of tuberculous pleurisy, which had the characters of a postpneumonic effusion.

The interest in this class of cases is twofold: First as illustrating the differential points between a transudate and an exudate, the former having a low specific gravity average 1008.6 for these cases, a small amount of fibrin, or none at all, and a small amount of albumin, which appears simply as a cloudiness of the fluid or at most as a light, flocculent precipitate on adding strong nitric acid. Second, in that the transudates all show a *positive lymphocytosis*—eighty-six to one hundred per cent., showing the fallacy of what has already been said, of basing a diagnosis of tubercular pleurisy simply on the differential count, as has been done by Dopter,[6] while Guilland [7] lays stress on the presence of large numbers of endothelial cells as a diagnostic point in transudates, also fallacious, as shown by reference to Series A and B, where large numbers of endothelial cells were frequently seen.

OBSERVATIONS ON CASES OF PLEURAL TRANSUDATES.

Series D.—Transudates.

Diagnosis.	Color of Fluid.	Specific Gravity	Fibrin.	Albumin.	Differential Count.	Small Lymphocytes Per Cent.	Large Mononuclears. Per Cent.	Polymorphonuclears Per Cent.	Eosinophiles. Per Cent.	Basophiles. Per Cent.	Notes.
Chrouic Nephritis. . . .	Straw Yellow	1010	Slight	Flocculent	Lymphocytosis	100	0	0	0	0	Temp., 97° to 100° F.
Same	Pale Gray	1007	None	Small Flocculent	Lymphocytosis	86	0	9	4	1	Tem., 98° to 100° F.
Chronic Endocarditis . . .	Yellow Amber	1010	None	Small Flocculent	Lymphocytosis	98	1	1	0	0	—
Cardiac dilatation with acute pericarditis . . .	Yellow	1008	None	Small Flocculent	Lymphocytosis	99	0	1	0	0	Tem., 97° to 104.7 from acute pericarditis
Cardiac dilatation and hypertrophy	Yellow	1008	Slight	Small Flocculent	Lymphocytosis	92	8	0	0	0	Tem., 98° to 100° F.

TABLE FOR AVERAGE FOR COMPARISON.

Form of Pleural Fluid.	Specific Gravity.	Amount of Fibrin.	Amount of Albumin.	Differential Count.	Temperature.		Amount of Fluid.
					Average Highest.	General Average.	
Proven tuberculous . .	1018.3	Large	Large	Lymphocytosis 96.9 per cent.	103.2° F.	100.7° F.	32.6 oz.
Probably tuberculous .	1019.4	Large	Large	Lymphocytosis 96.1 per cent.	102.9° F.	100.4° F.	53.2 oz.
Post-pneumonic	1016.5	Large	Large	Polymorphonuclears, 71.7 per cent.	101° F.	99.7° F.	18.5 oz.
Transudates	1008.6	None or Small	Small	Lymphocytosis 95 per cent.	?	?	?

Among the various pleural fluids examined there were two cases resulting from pistol-shot wounds of the chest-walls which gave a marked eosinophilia—one of 70.2 per cent., the other 87.8 per cent. of eosinophiles. The significance of this is not known, and although Widal and Revant [2] report three cases somewhat similar, the eosinophiles running from fourteen to fifty-four per cent., they offer no explanation, and these cases are reported merely as curiosities.

CONCLUSIONS.

While, of course, these cases are too few in number to draw positive conclusions from, the results, as outlined, are at least extremely suggestive, and so far as one can see the uniformity of the analyses in the various series of cases, seems to justify the following tentative conclusions:

1. That a true pleural effusion has a specific gravity over 1010, usually much higher, with an average of about 1017.9; a high fibrin and albumin content.

2. A pleural transudate has a low specific gravity, with an average of about 1008; a small fibrin and albumin content.

3. An almost certain diagnosis of tuberculous pleurisy as can be made by the morphological examination of the fluid alone, and rests on its having a high specific gravity—1012 to 1024, average, 1018.6; a large amount of fibrin and albumin, with an accompanying lymphocytosis. There is usually a considerable rise of temperature at the outset, which may average 103.4° F.

4. According to some authorities, one may find a polymorphonuclear leucocytosis before the third or fourth day of a tuberculous pleurisy; in which case, subsequent examinations will be necessary to establish a positive diagnosis.

5. A diagnosis of postpneumonic serous effusion lies in its high specific gravity, averaging 1016.5; large fibrin and albumin content, with a polymorphonuclear leucocytosis, 58 to 92.5 per cent., averaging 71.7 per cent. The temperature is usually much lower than in the tuberculous cases, unless complicating an active pneumonia, averaging at the outset about 101° F.

6. A differential diagnosis between a pleural transudate and a tuberculous pleurisy cannot rest alone on a differential cell count, as they both show a lymphocytosis, but must rest on a more complete examination, including the specific gravity and the amount of fibrin and albumin, as already shown and explained.

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AN ANALYSIS OF FORTY-TWO CASES OF VENOUS THROMBOSIS OCCURRING IN THE COURSE OF TYPHOID FEVER.

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In connection with some studies in which we have recently been engaged concerning the cardiac and vascular complications and sequels of those cases of typhoid fever which have been observed in the last fourteen and a half years in Dr. Osler's wards at the Johns Hopkins Hospital, I have gathered together a few statistics with regard to the cases of venous thrombosis which are, it seems to me, of a certain interest.

Out of 1,463 cases of typhoid fever there have been 39 instances of venous thrombosis, a percentage of 2.6.

In addition to these, two similar cases were admitted during convalescence, while one man who had suffered from double iliac thrombosis coming on during typhoid fever, entered the hospital for treatment two years later.

Mortality.—In five of the 39 cases occurring in the hospital there was a fatal result—12.3 per cent. In two instances the thrombosis was the direct cause of death, once (No. 27,855) through a pulmonary embolism from a thrombus of the left axillary vein, and once (No. 28,600) from the dislodging of a piece of a thrombus in the left iliac vein with resulting embolism of the inferior cava and right auricle.

Distribution of the Lesions.—(*a*) *As to section of the body.* The seat of the thrombus was: In the lower extremities in 40 instances; in the upper extremity in one; in the pulmonary artery in one.

(*b*) *As to side of the body.* The occluded vessel was: On the left side in 26 cases; on the right side in five; on both sides in nine; imperfect records in two.

(*c*) *As to vessel affected.* The affected vessels were: The femoral vein in 21 instances; the popliteal vein in five; the iliac vein in five; the veins of the calf alone in five; the internal saphenous in three; the pulmonary artery alone in one; the pulmonary artery and common iliac in one; the axillary vein in one.

Time of Onset of the Symptoms.—In 39 cases developing in the hospital the time of onset was as follows:

Weeks.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	10	9	5	3	2	4	0	1	1	0	1	1

Symptoms.—1. *Fever.*—In 36 of our 39 cases the development of the thrombosis was associated with fever. In three there was no fever. In 26 cases the fever was intercurrent, the thrombosis coming on before complete defervescence. In 13, the temperature was normal at the time of onset.

2. *Chills.*—In 11 or 28.2 per cent. of these 39 cases, the complication was associated with chills.

In two instances the chills occurred just at the time of recognition of the thrombosis. In two cases the chills occurred before recognition; once four days, and once a week before. In six cases the chills occurred during the complication; once during the period of subsidence and in the other five instances during the height of the process. Once the chills occurred before, during and after the onset of the thrombosis. In one of the three cases entering the hospital after the acute symptoms had passed, a history of chills during the course of the fever was obtained, though their relation in time to the development of the thrombosis was not clear.

3. *Pain.*—The first definite symptom of the thrombosis in every instance was pain. This varied considerably in intensity and suddenness of onset.

In all the cases of *femoral thrombosis* but one there was pain along the course of the femoral vein. In this instance the only symptoms noted in the hospital were those of popliteal thrombosis. The subsequent history of the case, however, made it clear that there must also have been plugging of the femoral vein.

The first localizing symptom of the process was: Pain along the course of the femoral vessels and in Scarpa's triangle in nine cases; pain in the calves in five; pain in the popliteal region in one; unsatisfactory note in three; patient too ill to localize pain in one.

In three of these cases the onset of the pain was strikingly sudden. In the five cases of *popliteal thrombosis* the first localizing symptom in every instance was pain in the popliteal region. In the five cases of *iliac thrombosis* the onset was associated with a sudden sharp abdominal pain in four instances. In one of these cases the pain was extremely severe and associated with leucocytosis. Perforation was suspected and exploratory laparotomy was performed. In the five cases of thrombosis of *deep veins* of the calf the first symptom in every instance, was pain in the calf.

In the three cases of thrombosis of the internal saphenous vein alone, the first symptom in every instance was pain along the vein.

4. *Edema.*—In all of the 39 cases there was swelling of the affected part. In most instances the temperature was raised, and in a number of cases there was redness over the affected vessel. A definite note as to the existence of edema was unfortunately not made in all instances.

(*a*) In 19 cases of femoral thrombosis edema was noted in 11 cases; "swelling" alone in six. There was no edema in two cases.

(*b*) In five cases of iliac thrombosis there was edema in two instances; no edema in three.

(*c*) In five cases of popliteal thrombosis there was edema in two instances; "swelling" in one; no note in one; no edema in one.

(*d*) In five instances in which the deep veins of the calf were apparently alone involved there was edema in one case; "swelling" in three; no edema in one.

(*e*) In all three cases in which the internal saphenous and veins of the calf were involved there was edema.

5. *Palpability of the Thrombotic Mass.*—In 16 out of the 39 cases the thrombotic mass was felt as a palpable cord.

6. *Leucocytosis.*—In 22 cases counts of the colorless corpuscles were made during the complication.

The leucocytes were over 20,000 in	3 cases.
15,000 to 20,000 in	3 cases.
10,000 to 15,000 in	6 cases.
9,000 to 10,000 in	3 cases.
8,000 to 9,000 in	1 case.
7,000 to 8,000 in	1 case.
6,000 to 7,000 in	2 cases.
2,000 to 3,000 in	1 case.

It will thus be seen that in 12 or 54.5 per cent. the leucocyte counts was above 10,000, while in 15 or 66.1 per cent. it was over 9,000.

The highest count, 24,864, occurred in a case of iliac thrombosis in the third week of typhoid fever. In this instance an exploratory laparotomy was performed in view of the possible existence of perforative peritonitis. The lowest count, 2,700, occurred on the day after the onset of a thrombosis, apparently of the popliteal, which occurred in the sixth week without fever and with very slight general symptoms. In eight instances only was a count made on the day of onset of the symptoms.

In these cases the leucocyte count was:

Above 20,000 in	2 cases.
Between 15,000 and 20,000 in	1 case.
Between 10,000 and 15,000 in	1 case.
Between 9,000 and 10,000 in	1 case.
Between 7,000 and 8,000 in	2 cases.
Between 6,000 and 7,000 in	1 case.

In connection with these blood counts it should be remembered that, in every instance but one, the phlebitis came on in the third week of the disease, or later, at a period when according to our statistics, the leucocyte count in uncomplicated cases should not be above 5,500.

Association with Secondary Infections.—Out of our 39 cases there were seven instances in which secondary infections had preceded or coexisted with the onset of the thrombosis.

These secondary processes were: Boils in two cases; well-marked bronchitis in one; gangrene of the lung in one; fistula in ano in one; chronic otitis media in one; amebic dysentery with developing hepatic abscess in one. In the remaining 32 instances there was no clinical evidence of secondary infection.

Post-Mortem Appearances.—In the three instances in which bits of clogged vein were examined histologically evidences of well marked inflammatory changes were found in the walls of the vessel—such, however, as might well have arisen secondarily to the thrombosis. In one of these cases there was, at the point of section, an extensive endophlebitic plaque which, however, probably dated from a period preceding the

typhoid fever. The sections examined came from a spot above the point of origin of the thrombus. There was nothing in the sections which would justify one in drawing conclusions as to the cause of the thrombosis or as to the pre-existence of a phlebitis.

Cultures.—In one case the *Bacillus typhosus* was obtained in pure culture from the thrombus. In one the cultures were negative. No notes were made with regard to cultures from the thrombus in the other two autopsied cases.

After-Results.—Sixteen patients were seen or communicated with at periods, months or years after the onset of the complication. Ten of these were cases of femoral thrombosis; two, of double iliac thrombosis; two, of popliteal thrombosis; two, of thrombosis of the deep veins of the calf.

(*a*) *After-History of Ten Cases of Femoral Thrombosis.*—One patient was seen 2½ months after convalescence; one, ten days after his discharge from the hospital, while two of the others were communicated with a year after the onset, by letter. The other six patients were examined at periods varying from two to twelve years after their illness.

In all instances there was more or less permanent disability. In six cases there had been *edema* lasting for from several weeks to two years. In five cases there was a complaint of *cramps* in calves, especially at night and after exercise. In one the patient complained of sharp *pains* running up through the leg and thigh, especially after standing. In one instance the patient said that when he uses his leg too much "it becomes so weak that he can hardly move it; it seems to give out." In every instance the affected leg and thigh were materially and permanently *larger* than the other. In all cases, excepting in the instance seen ten days after discharge, there were marked *varices*. These were especially extensive in the calf, the popliteal space and on the posterior and inner side of the thigh. In six cases, all but one in which the condition was looked for, there was well-marked varicosity of the veins in the hypogastrium. These seemed to be characteristic. The dilated veins form a triangle with the apex a little below the umbilicus, the blood flowing from the affected thigh to the apex of the triangle and then down again into the inguinal ring upon the other side, passing upward evidently through the opposite iliac vein.

(*b*) *After-History of Two Cases of Double Iliac Thrombosis.*—Two patients who had had a double iliac thrombosis were seen several years after the onset of the complication. In one of these instances there was at first much edema and persistent weakness of the legs. In the other there were few subjective symptoms. In both cases there were most extensive varicosities on both legs and thighs extending upward over the abdomen and anastomosing with the internal mammary veins and other veins in the axilla. The accompanying photograph shows the condition of the more marked of these two cases.

(*c*) *After-History of Two Cases of Popliteal Thrombosis.*—Two cases of popliteal thrombosis were seen several years after the onset of the complication. One of these patients had complained of no trouble whatever. In the other the leg was somewhat weak, and toward the end of the day, it became at times edematous. In both instances the affected leg was somewhat larger than the other, but in neither were there marked varicosities.

(*d*) *After-History of Two Cases of Thrombosis of the Veins of the Calf.*—In one case there was, after leaving the hospital, considerable edema

Fig. 1.

Abdominal Varices in a Case of Typhoid Thrombosis of both iliac veins.

with the development of several ulcers. There is now a fairly well-marked varicosity of the veins of the inner side of the leg and in the popliteal space. The other patient was communicated with by letter. He states "That the leg from the knee down is the source of a little continuous annoyance. It itches and is frequently inflamed during the warm months. It often goes to sleep." The calf measures an inch and a half more than the other.

Final Observations.—Conclusions based upon so small a series of observations are hardly justified. There are, however, one or two points worth emphasizing.

1. In 42 cases of typhoid thrombosis the onset occurred almost invariably in the third week or later.

2. Local pain and fever were usually the first

symptoms. The fever sometimes preceded the localizing symptoms.

3. In 28.2 per cent. of our venous thrombosis occurring in connection with typhoid fever there were chills. In several instances the chill preceded the appearance of localizing symptoms. In the past two years I have seen in consultation three further cases in which otherwise unaccountable chills during convalescence from typhoid fever, were followed by a complicating thrombosis.

4. Venous thrombosis in typhoid fever is usually associated with an increase in the number of leucocytes. The extent of the leucocytosis depends apparently in part, at least, upon the extent of the lesion. It may be moderate, but in other instances of considerable extent—over 20,000. In mild cases it may be absent.

5. The thrombosis is commonest in the lower extremities, especially on the left side. The femoral vein is involved with particular frequency.

6. In the event of a sudden severe pain in the lower part of the abdomen coming on during the latter part of typhoid fever and associated with a leucocytosis, the possibility of iliac thrombosis should always be considered.

7. Venous thrombosis in a lower extremity is always a serious complication of typhoid fever. Although the immediate danger is not great the after results are often grave. In thrombosis of the femoral or iliac veins the affected extremity is usually considerably and permanently enlarged and there is usually more or less permanent disability, extensive varices, often resulting in ulceration; marked weakness of the limb; frequent cramps in the muscles, especially at night and after overexertion. In thrombosis of the popliteal or deep veins of the calf alone, the permanent changes are much less severe, though the leg always remains larger than the other.

8. In thrombosis of the femoral vein a greater or less part of the blood from the affected extremity is often carried up by the iliac vein of the opposite side, the current crossing the abdomen through anastomosis in the hypogastrium, resulting in a characteristic triangular area of varicose veins.

THE TREATMENT OF SIMPLE RECTAL FISTULA BY EXCISION AND SUTURE WITHOUT CUTTING THE EXTERNAL SPHINCTER MUSCLE.[1]

BY HOWARD A. KELLY, M.D.,
OF BALTIMORE.

I am not aware exactly what plan of treatment for simple fistula is regarded as best by our proctologists to-day, but I desire to suggest for their consideration a method I have tried in about five cases, within the past ten years, with three successes.

To employ this treatment successfully the fistula must be simple and direct, as ascertained by exploring it with a probe, or, better still, by a careful palpation of the lower periphery of the bowel between the thumb and the index finger. I empty the bowel thoroughly, having the patient under my care for at least two days before the operation.

The rectum then is dilated under the anesthetic and a pack is inserted within the ampulla. The external orifice of the fistula, which must be free from any signs of surrounding infiltration, is then circumcised, and after being grasped with forceps the fistulous tract is carefully dissected out, up to its abutment on the mucous surface of the bowel, in the region of the internal sphincter muscle.

The rectal orifice is now very carefully excised through the wound, so as to make a transverse opening parallel to the sphincter fibers, when the excision is completed, and the fistula removed. If the wound is a shallow one, it may be closed by introducing a few interrupted silkworm-gut or silver wire sutures, extending from the skin surface down to the bottom, care being taken to draw the circular muscular fibers together above and below the rectal orifice. I have not yet tried it, but I believe that a figure of eight suture would serve a good purpose by avoiding the use of any buried sutures in a deeper wound. Buried sutures of fine catgut may be used at the bottom of the wound to bring the muscular tissues snugly together horizontally. In whatever way the suturing is done, the utmost care must be taken to bring the tissues everywhere into good apposition and to avoid leaving any dead spaces.

The margin of the bowel is next everted, and the operation concluded by closing the opening on the mucous surface with fine silk sutures. It is a good plan to cut away some of the mucosa below the rectal end of the fistula, so that when the mucous membrane is sutured the mucosa from the upper margin of the opening is drawn down and sutured to a point a centimeter or more below the orifice, in this way covering it in by withdrawing the line of suture from any direct relation to the deeper wound. Dr. J. M. T. Finney has brought the mucosa out into the skin surface and sutured it there with a good result.

After such an operation I make no effort to move the bowels for from five to seven days, keeping the patient on a diet consisting of nothing more than sips of albumin water.

If in a day or two the external wound shows signs of being inflamed, I would at once cut the sutures and drain it. Even if the external wound closes by granulation, the line of union on the mucosa may heal, and the sphincter muscle thus be saved. If the infection breaks through into the bowel, I would at once pass one blade of a pair of scissors, or a bistoury through the opening, divide it with one cut and pack it, when the patient would be no worse off than if an ordinary incision and packing operation along old lines had been done.

[1] Read before the meeting of the American Proctologic Society at Atlantic City, June 8, 1904.

OBSERVATIONS ON THE BLOOD AND CIRCULATION IN UNCINARIASIS.[1]

BY W. G. HARRISON, M.D.,
OF TALLADEGA, ALA.

The admirable work of Dr. C. W. Stiles in establishing the relationship between certain forms of persistent anemia and hookworm has made the latter a subject of increasing interest to the Southern profession. It is here, in the sandy section of our Southern States, that he found this parasite most flourishing and most destructive.

Uncinariasis is rare in clay soils, hence is quite infrequent in the district where I practice, but it has been my fortune to observe some six or seven cases, who are attending the State Schools for Deaf and Blind at Talladega. While fully conscious that we can reach no safe and scientific conclusions from such limited observations, nevertheless I trust this study is of sufficient import to merit your attention.

It might be interesting to review the entire symptomatology and clinical history of the following cases, especially with reference to the peculiar stare, general edema, depraved appetite, etc., but, for the sake of brevity, this report will be limited to observations on the heart, blood and circulation.

Case I.—T. D., white, male, aged sixteen years, Baldwin County, Ala. Point of maximum intensity of apex beat three-quarters inch below and one and a half inch external to nipple lines. Apical thrill, systolic in time. Heart dulness distinct one-half to three-quarters inch to right of right sternal border. Soft blowing systolic aortic murmur, not propagated. Great throbbing of neck vessels. Pulse soft, very compressible rate 122 (standing). Blood pressure 120.

Under use of calomel, santonin and thymol this boy voided over two hundred hookworms, and four months later his examination reveals the following condition:

Point of maximum intensity one-half inch below nipple and in line with it. No apical thrill, no heart dulness to right of sternal border; soft systolic murmur over center of cardiac area, but not propagated. Pulse rate 96 (standing). Blood pressure 145.

Final observation made April, 1904, just eleven months after institution of treatment, reveals the following changes: Point of maximum intensity five-eights inch below and three-quarters inch inside nipple lines. No throbbing of neck vessels, no thrill, no murmur. Pulse 81. Blood pressure 153.

Case II.—White, male, aged ten years, Chambers County, Ala. Point of maximum intensity, one and a half inch below and one inch external to nipple lines. Dulness about one finger's breadth to right of sternal border; no thrill; soft blowing systolic aortic murmur, distinctly propagated to neck vessels. Marked accentuation of pulmonic second sound. Both venous and arterial pulsations in neck. Pulse rate 124. Blood presure 110.

[1] Read before the Medical Association of Alabama, Mobile, Ala., April 18, 1904.

Under treatment similar to Case I, this patient voided 87 worms, and, upon his return to school after the summer vacation (four months later) an examination shows point of maximum intensity three-eighths inch external and one-half inch below nipple lines. Complete disappearance of murmur; no throbbing of neck vessels; no distinct dulness to right of sternal border. Pulse rate 91. Blood pressure 134. No pulmonic accentuation.

Final observation April, 1904, eleven months after treatment: Point of maximum intensity, five-eighths inch below and one-half inch inside nipple line; pulse 79; blood pressure 148. No murmurs and no throbbing.

Case III.—W. J., white, male, aged thirteen years, Henry County, Ala. Point of maximum intensity, 1¼ inch below and 1½ inch external to nipple lines; no dulness to right of sternal border; heaving impulse over entire cardiac area visible several feet distant from patient; systolic thrill over center of heart; accentuated pulmonic second sound is loud and snapping. Rough and harsh aortic murmur, propagated down and to the left; venous and arterial pulsations in the neck; pulse rate 122 (standing); blood pressure 104.

Under hookworm therapy this patient was relieved of more than a thousand worms within three days. When he returned to school, four months later, I then made the following note of his condition: Point of maximum intensity, one-half inch below and three-eighths inch outside nipple lines. Both the thrill and the heaving have disappeared; no cervical pulsations. While the murmur is no longer heard there remains a distinct accentuation of the pulmonic second sound. Pulse rate 85, blood pressure 148. Final observation April, 1904, eleven months after treatment, shows point of maximum intensity three-quarters inch below and three-eighths inch inside nipple lines; all throbbing, murmur and pulsations remain absent. There is now no noticeable accentuation of the pulmonic second sound. Pulse rate 73; blood pressure 156.

I should like to report a few details of other cases, but in these alone was I able to thoroughly study the blood changes, and so other cases must be omitted. I will now give a table showing observations on the blood proper:

	Red Cells.	White Cells	Hemoglobin % (Dare)	Polymorphonuclear acidophiles %	Small Mononuclears %	Large Mononuclears %	Eosinophiles %	Blood Pressure.	Pulse Rate (standing.)
Case I.									
Before treatm't.	1,739,462	5,760	27	59	23	12	5	120	122
4 months after. .	2,643,154	6,835	55	70	20	6	3	145	96
11 months after.	3,469,808	6,462	83	68	18	9	4	153	81
Case II									
Before treatm't.	1,964,750	6,736	29	64	20	8	7	110	124
4 months after. .	2,573,560	6,262	60	65	19	12	4	134	91
11 months after.	4,631,224	7,160	89	66	21	10	3	148	79
Case III.									
Before treatm't.	1,465,790	7,862	21	60	27	9	5	104	127
4 months after. .	2,977,232	6,500	70	62	23	12	3	148	85
11 months after.	4,628,134	6,230	70	71	18	8	3	156	73

The pulse rate was always counted while the patient was standing. In the estimation of hemaglobin the Dare instrument was used. There was slight poikilocytosis in Cases I and II, but none in three. No megaloblasts seen. From a careful study of these cases and a few others observed with reference to these symptoms one seems justified in the following conclusions:

1. Uncinariasis through its extreme anemia exerts a most marked influence on the heart, causing apparent increase in size (most likely dilatation), heaving pulsations, relative insufficiency, thrill and murmurs.

2. While these conditions may be accompanied by an accentuation of the pulmonic second sound, nevertheless they rapidly disappear when the cause of anemia is removed, and by slow degrees the accentuation is likewise obliterated.

3. The murmurs are mostly aortic, soft and blowing, but are both systolic and diastolic, all of which suggests they may be either hemic (due to anemia) or caused by relative insufficiency, result of dilatation.

4. The fact that the area of heart dulness seems to diminish susceptibility after the relief of the anemia, would suggest a marked dilatation, and this seems forcibly strengthened by observations on the blood pressure, which went up from 120 to 153 in the first case; from 110 to 140 in the second and from 104 to 156 in the third.

5. The blood cell changes are not especially significant other than indicating a marked anemia. Many more and oft-repeated observations would be necessary to establish a definite relationship between this anemia and the number of eosinophiles.

6. No megaloblasts found in these cases, as has been the rule in previous work.

7. The rise of blood pressure beginning immediately upon removal of the cause is a safe index to the returning strength of the heart.

8. Even in the most desperate cases we may confidently promise rapid improvement immediately after the removal of the worms.

The medical profession cannot be too grateful for the pioneer work of Dr. Stiles. Heretofore regarded as hopeless and incurable because its etiology was unknown, and its pathology unstudied, uncinariasis, through this investigator's own individual effort, has become one of the most easily recognized and readily curable affections. When we justly laud our own profession, let us not forget to render proper praise to our brother workers in the collateral sciences who, like Dr. Stiles, are blazing new paths for themselves and for us. No achievement in many years is attended with more brilliant results than the recognition and treatment of uncinariasis. Heretofore regarded as malaria, heart disease, or disordered digestion, it is now a distinct medical entity, simple in its diagnosis and still more simple in its relief.

OUR AIMS.[1]

BY S. J. MELTZER, M.D.,
OF NEW YORK.

In discharging the customary obligation of a president to deliver an address at the opening of an annual meeting, I shall follow the frequent custom and confine my remarks to the affairs of the Association.

In electing the present occupant of the presidency you broke away from a proper tradition. The first three presidents were taken from among the founders of the Association. I cannot claim such an honor. I was elected a member, was subsequently put on the Council of the Association in about the same manner as I was honored by the election as president—that is, without having been much consulted about it.

Not knowing very much about the original aims of the Association, nor the particulars of its subsequent history, and there being no published minutes of its proceedings, I have turned to our efficient secretary for some information.

Of the few data now in my possession none is more pleasant and interesting than the fact that neither I nor my predecessors have, or have had, any sad duties to perform. The Association has never yet met with the flag at half mast—for which we are grateful to the fates. But death is not the only decimator of societies. In fact, hardly any society ever dwindles away by the demise of its members. In a thriving society there are always a good many more births than deaths. Whether our Association can be considered as thriving you will know at a glance from the following few figures. According to our secretary, there were at one time supposed to be thirty-nine active members. To-day the Association counts only twenty-nine. That means a loss of 25 per cent. of its membership within the seven years of its existence—and a loss esssentially by resignation.

The Association was organized in 1897 in Philadelphia while the American Medical Association was holding its sessions there. We are again meeting in the shade of this Association, now reorganized and regenerated. Of late years its presidents are no longer merely successful medical politicians, but are leaders in the science and practice of medicine in our country. It was a disappointment to me when I discovered that both present presidents of that leading Association, the retiring president and the president-elect, had been members of our Association and had resigned. What ails our organization? Why do leading clinical men get out of it? There are in the United States many good men who are active workers in the gastro-enterological branch of the practice and science of medicine. Why are they not members of our Association?

Do not accuse me of tactlessness for publicly touching the sore point. In electing me president

[1] President's address, delivered at the opening of the annual meeting of the Gastro-Enterological Association, held in Atlantic City, N. J., June 6, 1904.

of this Association—and I must say without my knowledge and against my wishes—you have given me the privilege, and thus imposed upon me the duty of looking after its welfare, and I can do it only in my own way. I find that the Association is not thriving, is not occupying the proper rank among the high-standing medical fraternities; there must be a cause for it, a pathological focus somewhere. Let me probe for it without regard for the pain which it might give to some of us; it may lead to a radical cure.

What is the aim of our organization? A gastro-enteroligical association might mean a society for the study of the gastro-enteric part of the science and practice of medicine; or it might mean a society of practitioners who make gastro-enteric diseases their specialty. The medical men at large seem to think that our organization is a society of stomach specialists—for stomach specialists; hence their frowning upon its existence. Of the reasons for the disfavor with which such a union is looked upon there are two about which I shall speak. One is that the treatment of the diseases of the gastro-intestinal tract forms an essential part of the activity of the general practitioner, and the separation of this group of diseases into a new specialty is naturally not looked upon by them with favor. The other reason is a more serious one. It must be admitted that there are now in every large city practitioners who pronouncedly make the diseases of the stomach their specialty, and who, by their doubtful activity, throw a discrediting light upon gastro-enterology as a specialty. I am not speaking of the really bad characters. They are too well marked to be confounded with the good and clean men. I am alluding to the men whom we frequently hear speaking in the medical societies, who write numerous articles in the medical journals on some gastro-enterological topic, and who are often credited in the lay press with great discoveries in this specialty. To the undiscerning eye they are the real representatives of gastro-enterology. To the discriminating mind, however, these men and their activity are perfectly transparent. It is nothing but advertising for business sake. They are the men who throw odium upon gastro-enterology as a specialty, and hence the distrust with which the Association of Gastro-Enterology has to grapple.

Are the reasons valid? I shall say no. In the first place our organization is not a society of stomach specialists—for stomach specialists. The Association has in its ranks a goodly number of active members whose practical activity is in the field of general medicine. If the Association had been made up exclusively of stomach specialists, I would not have been its president; I would not have been even a member of it. It is only my very modest scientific activity in our field which brought me into your ranks, and you were liberal enough to honor me with the presidency of the Association, in spite of my published heresies in certain methods of practical therapeutics in diseases of the stomach, for which I still get a gentle rap once in a while from one or the other member of the Association.

No, the aim of our Association is and shall be to bring together all the solid scientific workers in the United States who contribute to the knowledge of the normal and pathological conditions of the gastro-intestinal canal. And there is ample justification for such a union. Many of the most characteristic anatomical, physiological and pathological features of the digestive canal are common to all its parts. But the field is already too large and the problems by far too many to be worked at with profit by a single set of men. One can spend a lifetime in active original work on the motility or the chemistry or the clinical symptomatology of the disorders of only one part of the digestive canal without having accomplished more than one small fraction of his task. At the same time it is indispensable for each student to know and learn the workings of every part of the gut, since they are mostly controlled, at least in a general way, by the same principles. It would be very profitable indeed if all the active students of the workings of the normal and pathological tract: the anatomists, physiologists, pathologists, internists and surgeons would come together, exchange their views and communicate the recent advances made in their respective spheres. The anatomists and physiologists can nowadays learn a good deal from the experience of the intelligent active surgeon. A great deal of benefit can be derived from such a gastro-enterological organization, and there is ample justification for its existence. There can be some discussion as to the advisability of too great a division of labor in the practice of medicine, but there can be no doubt as to the desirability of the division of labor in the study of the science of medicine.

It is our duty, it should be our task, to build up our Association on a high, ideal, scientific basis, and to develop it along the lines we have sketched above. We shall thus dispel all distrust against our organization, and attract to it all the good men who by the nature of their activity belong to us.

Moreover, by so doing we shall also find the means to cope with the evil menacing us by the pernicious activity of the doubtful individuals we have described above. We shall elect to membership only those men whose solid work bears unmistakable witness of their scientific spirit and their scientific worth, and shall exclude such individuals whose prolific writings have the stamp of a pseudo-scientific activity. And, above all, the moral standing of the individual who seeks admission to our ranks should be scrupulously studied. We should shut the door in the face of candidates with any odium upon their activity. Moreover, we should also open the door from the inside for the expulsion of such members whose activity is apt to drag the society down into disrepute, if in spite of all vigilance should such undesirable individuals be found among our ranks. The simple existence of such a paragraph in our

constitution might have a wholesome effect upon the activity of some unprincipled individuals.

For the purpose of attaining the above outlined desirable ends, I recommend in the first place that the president should be empowered to appoint a large committee, say of seven, which shall be entrusted with the proper execution of the following mandates:

A.—To prepare proper amendments to our constitution in which (1) the ideal aims of the Association are set forth in a clear and broad-minded way; (2) the intellectual and moral requirements of candidates are concisely stated; and (3) the provision of methods of punishment should be stated for behavior unbecoming a member of a high-standing medical and scientific society.

B.—To study the good work done on the normal and pathological conditions of the digestive canal, and to persistently urge the men who are doing such work in the United States and Canada to join our Association, provided their moral standing makes them eligible. We should try with perseverance to attract to our ranks good men who are doing creditable work in anatomy, physiology, pathology, internal medicine and surgery of the digestive tract.

I would like also to go on record with another suggestion, which to my mind would tend to solidify and elevate our Association. It is to start an American journal (monthly or quarterly) for Gastro-Enterology, under the careful editorial management of this Association. The original articles should not be too many and only of first order. But the journal should contain a complete classified account of the gastro-enterological literature of this country. Even the sham publications should find a place there, but a fitting one.

However, this suggestion is not offered for its immediate consideration. Elevation, growth and development of our Association should be for the present our first and sole task.

REPORT OF A CASE OF OBSTINATE PHOSPHATIC DIATHESIS CURED BY SYSTEMATIC DILATATIONS OF THE POSTERIOR URETHRA.

BY GEORGE THEODORE MUNDORFF, M.D.,
OF NEW YORK.

In presenting this short communication, the writer proposes to discuss neither the question of the pathology of phosphaturia, save in a brief way, nor the advisability of the use of the urethral dilator as a routine remedy in the treatment of that disease. It is his purpose merely to offer the result of his observations in a case treated by this method, which had resisted all forms of therapy with the exception of the one in question, and to leave the problem of its true therapeutic value a matter for independent judgment and further experimentation.

It is but fair to state that the case about to be reported was not one of true phosphaturia,—an actual increase in the elimination of phosphoric acid,—but a form of so-called phosphaturia with alkaline urine and the consequent precipitation of the phosphates, which is so often met with in neurasthenics with gastric disturbances. In many respects it did resemble the class of cases to which Tessier has applied the term "phosphatic diabetes" in which phosphaturia and polyuria are combined with loss of flesh and strength. There was great general debility and indigestion, associated with an impaired tone of the nervous system, aching pains in the back and limbs, and on two occasions while under treatment, the patient presented a crop of boils on his neck and arms. The patient, too, excreted an excessive amount of urine, the daily average amounting to a little over ninety ounces. Occasionally, the phosphatic precipitate would represent one-eighth to one-sixth of the entire bulk. The history of the case is as follows:

Case.—Mr. J. W., age thirty-eight years, married, engaged in a large mercantile business, consulted the writer during the fall of 1902. Family and personal history negative, save that the patient admitted having had a gonorrhea some six or seven years ago. This was treated in the usual way by means of internal and local medication, and was cured in about four months. About five years ago, he became allied with a very large mercantile house, and soon assumed a considerable share of its financial responsibilities. In a short time, he began to complain of great nervousness, confusion of mind, irritability and depression of spirits. At this time he noticed that he was passing a large quantity of urine. This did not give him much concern, since he referred to it as a symptom of nervousness. He became alarmed, however, when he observed later that the urine was of a milky color. This peculiarity prompted him to consult his physician. The urine was examined, and was pronounced as containing phosphates. The patient was given mineral acids, and was advised to eat sparingly of meat. Sexual intercourse, too, was in great part interdicted.

No improvement followed this plan of treatment. He was now given benzoic acid in fairly large doses, and advised to take a sea voyage. He remained away from business nearly two months, and, notwithstanding his observing every feature as to proper diet, exercise and medication, continued to grow worse. The glycero-phosphates were now administered, and while the appetite was somewhat encouraged, the condition of the urine remained unchanged. At times, the patient suffered from insomnia, and he was compelled to resort to some of the bromides to obtain relief. His duties at the office were now very much curtailed, and his business hours considerably lessened. He made it a practice, too, to leave the city for a few days every two or three weeks.

Everything was now done that tended to increase the general vigor. Systematic exercise in the open air, and sea-bathing were recommended, and appeared to produce a happy re-

sult. The patient gained in weight, the appetite was increased, and there was a decided change in the general condition. The urine, though, was still loaded with phosphates. Small phosphatic calculi about the size of a small pea were occasionally voided with the urine. The patient was now informed to resume his former work, and was given some bitter tonic. He presented himself at regular intervals for over two years, during which time the daily amount of urine steadily increased; the phosphatic sediment, too, became greater. The general condition was good. It was about this time that the patient came under the observation of the writer.

Status.—Heart and lungs normal; liver not enlarged. No urethral discharge. Prostate slightly enlarged and moderately sensitive. Urine, turbid; upon standing for a few minutes, a heavy white sediment quickly forms. The urine is alkaline in reaction; the specific gravity is 1028; no albumin; no sugar. A small portion of the sediment was examined under the microscope, and found to be composed mainly of the ammoniomagnesian or triple phosphates. There were no pus cells. To determine roughly the proportion of the earthy phosphates, a few drops of ammonia were added to a test-tubeful of the urine. A white precipitate about 5½ c. high was produced, which was not dissolved by heat. In an ordinary-sized test-tube a deposit one centimeter high represents a normal amount. While a sediment of the earthy phosphates does not necessarily indicate that there is an abnormal amount in the urine, it does, however, show the alkaline state of the urine and the possible outcome of such a condition, and it also points out the possible danger of phosphatic calculi formation.

After having filtered out the precipitated earthy phosphates, a small quantity of a saturated solution of magnesium sulphate was added to the same urine in order to estimate roughly the amount of the alkaline phosphates—sodium and potassium phosphates. A milky turbidity of the fluid followed, which may or may not have indicated an excess of the alkaline phosphates. Unfortunately, at no time while the patient was under professional care, was any attempt made to ascertain the quantity of phosphoric acid in the urine. Normally, the average quantity passed by an adult in twenty-four hours is, according to Vogel, about 50 to 53 grains. Whether there was an excess in this case is not known.

Examination for stricture of the urethra proved negative.

Therapy.—The patient was given dilute phosphoric acid, ten to fifteen drops in water shortly after meals. The bladder was irrigated with a mild solution of boric acid two or three times a week. In the way of hygiene everything was suggested that tended to improve the general vigor. Animal food was to be taken with each meal. This was about the general outline of the treatment for nearly five months. Internal medication consisted in the administration of the different mineral acids, benzoic acid, cod-liver oil emulsified with hypophosphites and containing iron, ammonium benzoate and salol. Each in turn was given a fair trial, and each proved ineffectual. The patient gradually grew worse. On two occasions, crops of boils appeared and required lancing. Sugar was never found in the urine. Cystoscopy was performed on several occasions, and revealed a thickened trabeculated condition of the bladder wall. No stones were found. The prostate appeared to be enlarged.

Subsequent Treatment.—Having observed a few instances of "phosphaturia" in cases of retention of urine due to temporary or permanent paralysis of the bladder, as in hemiplegia and paraplegia as well as in cases of prostatic hypertrophy, and recalling the effects of the same treatment in another similar case, the writer was prompted to give posterior dilatations of the urethra and with it dilatations of the internal sphincter a trial in the case under discussion. Kollmann's posterior dilator was used for the purpose. Dilatations were made once every week, and irrigations of the bladder with a mild boric acid or silver nitrate solutions were made a few days after each dilatation. It was remarkable to observe the decided change for the better that occurred after a few treatments by this method. The patient's spirits became brighter, and the turbidity of the urine gradually disappeared. In eight weeks, the urine was absolutely clear. Dilatations were continued for another four weeks, at the end of which time the patient was discharged cured. Since then the writer has seen him at regular intervals, and at no time has there been a return of the old complaint.

About six years ago the author had a similar case under his care. In this instance, there was a stricture of the urethra. Its caliber permitted the introduction of an 18 F. sound. After some preparatory dilatation, it was possible to introduce the regular Kollman dilator. This form of treatment produced in a most striking manner a decided amelioration of the phosphatic condition. Encouraged by this result, the writer began systematic dilatation of the posterior urethra. While an improvement followed, it was not permanent, and the patient finally discontinued his calls at the office.

Without in the least indulging in the luxury of conjecture, the writer desires to express his view as to the *modus operandi* of posterior urethral dilatation in affecting the decided relief in the case here reported. It is well known that a hyperemic or chronically inflamed condition of the prostatic urethra often produces marked neurasthenic symptoms. The nerve supply of this region is exceedingly rich. The bladder, seminal vesicles and the prostate receive filaments from the vesical plexus, which, in turn, is made up of numerous branches from the hypogastric branch of the sympathetic, together with branches from

the sacral ganglia and from the pudendal plexus of the sacral nerves. Any irritation of this locality is sufficient to excite functional disturbances of distant organs. The general symptoms are those of neurasthenia. Is it not possible that the phosphatic condition of the urine is due to some reflex secretive anomaly of the kidney?

Accepting these premises, it is fair to conclude that our patient was suffering from some inflammatory condition of the posterior urethra. The patient had had a gonorrhea, and, as has been already mentioned, there was some enlargement of the prostate gland. Local treatment of the prostatic urethra by means of direct applications of strong solutions of nitrate of silver and the passage of sounds are effective means of relieving congestion, and thus restoring the muscular tone of the adjacent organs. In our case, the posterior dilator, as devised by Arthur Kollman, of Leipzig, was employed, an instrument far superior to the ordinary sound.

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MEDICAL PROGRESS.

PHYSIOLOGY.

The Effect of Alcohol upon the Excretion of Uric Acid.—A consideration of the results of his experiments leads S. P. Beebe (*Am. Jour. Physiol.*, September 1, 1904, to conclude that it is hardly possible to doubt that alcohol, even in what is considered by the most conservative as a moderate amount, causes an increase in the excretion of uric acid. This effect is seen almost immediately after taking the alcohol. That the above is due to toxic effect in the liver, thereby interfering with the oxidation of the uric acid derived from the precursors in the food, is indicated by the following points: Alcohol taken without food causes no increase; if the food contains less purin there is a smaller increase in excretion; the maximum increase takes place at the same time after a meal as when purin food but no alcohol is taken; the purin bases are effected to the same degree as the uric acid; alcohol is rapidly absorbed and passes at once to the liver, the organ which has most to do with the metabolism of proteid cleavage products. There is no evidence that the alcohol has merely hastened the excretion of urates normally present in the blood; the increased excretion means that a larger quantity has been in circulation, which might be harmful in pathological conditions. The author believes that if the origin of the increased quantity of uric acid be attributed to the impaired oxidative powers of the liver, the results of these experiments will have greater significance than if attributed to uric acid alone. For the impaired function would affect other processes, which are normally accomplished by that organ, and the possibilities for the entrance into the general circulation of toxic substances, of intestinal putrefaction, for instance, would be increased. The liver performs a large number of oxidations and syntheses designed to keep toxic substances from reaching the body tissues, and if alcohol, in the moderate quantity which caused the increase in the uric acid excretion, impairs its power in this respect, the prevalent ideas regarding the harmlessness of moderate drinking need revision. Alcohol is a food in the sense that when used in small quantities the energy from its oxidation may be used for some of the body needs, but since, at the same time, it interferes with the normal activities of a most important organ, its food-value may be counterbalanced by its toxic effect. Salt water may be used in a steam-boiler, and the steam from its evaporation may transmit the energy of the fuel to the revolving wheels, but its corrosive action on the steel forbids its use, like alcohol, except in emergencies.

Contributions to the Knowledge of Ferments.—The decomposition of peroxide of hydrogen on contact with platinum has been called a catalytic effect; and it has been supposed that the catalytic agent acts by virtue of its attraction for one of the atoms in the unstable molecule. Of no uncertain importance from the standpoint of the physiological significance of ferments are the researches of L. Liebermann upon the nature of catalysis by means of colloidal platinum (*Pflüger's Archiv.*, August 15, 1904). The author finds that solutions of colloidal platinum contain active oxygen. The latter may be partly renewed or rendered inactive by means of heating or by means of gases, such as hydrogen and nitrogen. Hydrogen powerfully damages and causes a peculiar change in the colloidal solutions of platinum, as evidenced by the changed color of the latter. If kept in contact with air or oxygen, solutions of colloidal platinum resist the action of heat a longer time than if in contact with such indifferent gases as hydrogen and nitrogen. From this fact the conclusion is drawn that in the catalysis of H_2O_2, oxygen plays an important rôle; the colloidal solutions of platinum possess the capacity of activating molecular oxygen. It would seem as if loose compounds of platinum and oxygen are formed. Up to a certain limit the catalytic action of colloidal platinum upon H_2O_2 is increased if a stream of hydrogen is caused to flow through it. The faster the stream the stronger will the catalysis afterward be. A quantity of hydrogen too great has exactly the opposite effect. The introduction of nitrogen likewise increases the catalytic effect. This increase is attributed to the mechanical agitation produced by the streaming gas, which, by breaking up larger measures of the platinum, renders this capable of uniting with a large amount of oxygen. Ozonized air markedly impairs the activity of colloidal platinum. The animal tissues, such as cartilage, brain-substance, vitreous humour and the crystalline lens and fatty tissue, contain substances, obtained in watery extracts of the tissues, which bring about the catalysis of H_2O_2. These extracts, like those obtained from malt, which also contain similar catalytic agents, contain very little active oxygen. But the former, unlike the latter, do not give the guaiac reaction, which shows that the catalysis of H_2O_2 and the guaiac reaction are due to distinct ferments. The guaiac reaction is as follows: If an alcoholic solution of guaiac resin is mixed with watery solutions of various animal and vegetable substances, or with certain inorganic substances (ferric chloride, etc.), there results a blue coloration. Since it has been shown that this reaction occurs in the presence of oxidizing substances, it follows that in the case of the plant and animal tissues that give the reaction, oxygen must be present. The mechanism of the guaiac reaction seems to consist in a union of guaiac with molecular oxygen and the release of active or atomic oxygen in the presence of an oxidizable surface. This capacity, possessed not only by guaiac resin, but also by many other substances, is probably bound up with the large extent of surface represented in the very fine particles present in solution, the surface attraction of which is capable of tearing asunder the constituents of the inactive oxygen molecule. The active oxygen atom thus liberated is, however, still bound up to such an extent that it can-

not be driven out by gases that are inactive with respect to guaiac tincture. In order to bring about the rapid oxidation of guaiaconic acid, a catalytic agent or ferment is necessary. This catalyser operates by uniting, if only for a moment, with active oxygen, and transferring it from one group of guaiac to another, guaiaconic acid, to whose oxidation the blue coloration is attributed. The guaiac reaction thus throws light upon the mechanism of enzyme action. But it is interesting from another point of view. It helps to explain certain phenomena conected with the destruction of certain foreign and toxic bodies in the organism. Certain pathogenic bacteria can be rendered innocuous by the protective bodies normally present in the organism, only by uniting with these bodies. Buchner calls these protective bodies alexins, and Ehrlich complements. These substances act so slowly that they cannot fortify the organism against an intoxication. On this account another body is necessary, the immune body (amboceptor, matière sensibilisatrice), which will unfold the activity of the alexin or alexins. Only by means of these immune bodies are the protective substances in a condition to neutralize the toxins before they can bring about a general poisoning of the system. The analogy to the phenomena of the guaiac reaction is as follows: The pathogenic agent corresponds to the guaiac, the alexin to the active oxygen, and the immune body to the enzyme. The immune body is nothing more than a catalyser. The specificity of the actions of the immune bodies might depend upon the fact that the foreign agents (bacteria or otherwise) prepare, from some part of the organism or from themselves, an immune body (catalyser) which will hasten the reaction between the protective body and its own toxin. In this respect there is no analogy to the guaiac reaction.

The Combined Action of Proteolytic Enzymes.—A series of experiments were conducted by P. A. Levene and L. B. Stookey (*Am. Jour. Physiol.*, September 1, 1904), with the view of determining the combined action of various proteolytic enzymes. The observations were made on the combined action of spleen and pancreas, and of spleen and liver. The action either of the minced glands or of extracts of the same was studied. It was found that when spleen and pancreas were allowed to act simultaneously on a foreign proteid, —egg albumin or casein,—the quantity of products of digestion resulting from their action was greater than the total sum of products obtained by the digestion of equal quantities of spleen and pancreas acting separately. It was thus not a summation of the action of two enzymes, but an increase in the digesting energy of one or both. From the results of some of the experiments the increased action might be attributed to the pancreas. Thus when three parts of pancreas and one part of spleen were allowed to act on a foreign proteid, the quantity of digestion products was greater than in the experiments where pancreas and spleen were taken in equal proportions or in proportion of one part pancreas to three of spleen. In another experiment, fresh pancreas was allowed to stand under antiseptic precautions for about forty-eight hours at room-temperature. At the end of that time, all the zymogen of the gland presumably is transformed into enzyme. Fresh spleen was added, and their combined action in foreign proteid was not noticeably greater than an equal portion of pancreas similarly treated and an equal quantity of spleen acting separately. These experiments, the authors believe, seem to corroborate the views of Schiff, Herzen, and Mendel and Rettiger, namely, that the spleen facilitates the transformation of the pancreatic zymogen into the active enzyme.

MEDICINE.

Agglutination With Icterus.—Many observations have been made, and much has been written upon positive typhoid agglutination where typhoid could be positively excluded, but where a more or less intense jaundice was present. Many explanations have been given, and it is therefore gratifying that H. Lüdke (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), has tested a large number of cases, to determine the cause of the clumping. In seven out of nine cases of catarrhal jaundice a distinct agglutination in a dilution of one to forty was obtained, but most cases of carcinoma congestion, cirrhosis, abscess, fatty degeneration and amyloidosis of the liver were negative, even though the jaundice at times was most intense. All in all, 36 liver cases were examined; of these 32 were icteric, but only 19 showed clumping in a dilution of 1:20 and 11 in a dilution of 1:50 or over. Seven cases of icterus neonatorum gave negative results, but in a number of other diseases (nephritis, diabetes), a very feeble agglutination could be obtained. All positive icteric cases were also tested with bacteria allied to the typhoid bacillus, with the result that the *Bacillus coli*, paratyphoid and vulgare were also aggutinated, but less strongly, except in Weil's disease, which seems to stand in special etiological relation to the *Proteus*.

Bile and its constitutents or the serum of animals treated therewith, had no particular influence; where some agglutination was present, it could be proved that this was a property inherent to the normal serum of that particular animal. Artificial jaundice induced by toluylendiamin, inhalations of arseniuretted hydrogen or injections of ether had very little influence upon the serum in its behavior toward typhoid bacilli. Agglutination may thus occur under three conditions: (1) In typhoid, where it is invariably most rapid and pronounced. (2) In infections with an allied germ, especially in catarrhal jaundice, cholelithiasis and Weil's disease (group-agglutination). (3) Owing to a disturbed composition of the blood. The Widal reaction can thus be no longer looked upon as a specific reaction, though it will still continue to be valuable for the diagnosis of typhoid fever.

Symptomatology of Arteriosclerosis.—Based upon the careful analysis of 54 cases of arteriosclerosis of the arota, not complicated by aortic stenosis, aneurism, coronary sclerosis or nephritis, A. Bittdorf (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), gives the following account of the symptoms: Frequently the face is remarkably pale, often of ashen hue, though sometimes the patients appear decidedly plethoric. There is often a tendency toward obesity and the pupils may differ in size, though their reflexes are normal and no pathological lesions were found in the retina. Abnormal pulsations in the subclavian and corotid vessels are generally very evident, but do not differ from those of chlorosis or aortic valve disease. Phlebectasiæ upon the anterior chest wall may be uni- or bilaterial or may appear only with forced respiration; occasionally they are accompanied by a moderate edema over the upper part of the sternum, such as is sometimes described with aneurism. Respiratory symptoms are signs of pulmonary emphysema, tendency toward catarrh, diffuse dilatation of the bronchi with hemoptyses and an increased susceptibility toward tuberculosis. Cardiac hypertrophy is a very common sign; the first aortic sound is distinct and clear, the second accen-

tuated and often there is slight but distinct dulness over the manubrium sterni corresponding to the second rib on the right side. Rarely systolic pulsation is seen in the second right interspace. The peripheral vessels show slight or moderate arteriosclerosis, and it is not uncommon to find slight differences in the pulse of both sides. Pulsus celer is common, pulsus tardus and paradoxus, rare. The blood-pressure is generally above normal. A valuable aid in diagnosis is the examination with the Roentgen ray, since the dilatation of the aorta resulting from loss of elasticity, will give rise to a very distinct shadow. Less common signs are retinal hemorrhages, embolism of the retinal vessels, glaucoma, dyspeptic disturbances. The patients generally complain of palpitation of the heart and cardiac oppression after exertion, dyspnea, attacks of vertigo, owing to deficient blood-supply of the brain, tinnitus aurium, feeling of weakness in the arms and sometimes tenderness on percussing the upper sternum.

Fatal Case of Boric Acid Poisoning.—The popular fallacy that boric acid is innocuous to the system is contradicted by the report of a case by C. I. Best (*Jour. Am. Med. Ass'n*, September 17, 1904), which constitutes the fifth thus far announced in the literature. The patient presented a suppurative inguinal adenitis, otitis media and mastoiditis. The inguinal glands were excised and the cavity packed with about six ounces of boric acid powder. Soon after the operation the man developed the typical signs of boric acid poisoning,—profuse vomiting, a papular rash over the face, neck and chest, and a weak irregular pulse. The onset was rapid and the fatal issue came on within four days. There was also delirium and slight rise of temperature. Post-mortem examination showed congestion of the liver, spleen and gastro-intestinal tract, and a cloudy swelling and granular degeneration of the liver and kidney cells. There were also supericardial hemorrhages, together with discoloration and maceration of the tissues about the cavity in which the boric acid was placed. These findings limit the cause of death to one of two things: A toxemia, resulting from the abscess in the groin, or from the medicinal agent employed, as other recognizable causes were not present. Its resemblance to other cases previously reported, together with the demonstrated overuse of the drug, was sufficient for the diagnosis. The clinical features and the lack of success in cultivating pathogenic bacteria from the blood eliminate septicemia, which is the condition most likely to be simulated in such a case.

Multiple Myelomata.—A very remarkable case of multiple myelomata of the bones, has been observed by A. Scheere and L. Herxheimer, (*Zeitschr. f. klin. Med.*, Vol. 54. Nos. 1 and 2). The patient had been suffering for a long time from vague pains in different parts of the body and had been treated for rheumatism by all who had seen him, until with a slight twisting motion of the body, a fracture of the neck of the femur occurred. Even now there was some hesitancy as to the diagnosis since at no time were Bence-Jones bodies found in the urine.

The Roentgen rays, however, gave a clear picture of the condition of the femur and of other bones, and left no doubt that a serious bone-trouble was present. Other symptoms were an irregular remittent fever and a consecutive anemia. The number of leucocytes present was always normal. At autopsy it was found that the neoplasms had affected a large part of the entire skeleton without causing metastases elsewhere.

PATHOLOGY AND BACTERIOLOGY.

Bence-Jones Albumin.—In a case of multiple myelomata examined by L. Lindemann (*Deutsch. Arch. f. klin. Med.*, Vol. 8, Nos. 1 and 2), the urine presented the following reactions: When warmed up to 60° to 65° C., a tenacious precipitate appeared, which partially dissolved on boiling, and reappeared on cooling. Nitric and muriatic acids give rise to a precipitate in the cold, which also dissolved on boiling. The same was true of tannin and acetic acid and of picric acid. Millon's, Adamkiewicz's and Moluch's reaction were positive. The amount of proteid excreted was on the average 2 pro mille. Careful chemical examination showed that the body is more closely allied to albumins than to albumoses, and that it corresponds closely in chemical composition to the proteid excreted in other cases of myeloma previously published.

Changes of the Pancreas in Arteriosclerosis.—Arteriosclerotic changes in the pancreas, in the form of thickening of the intima, more rarely the media of the vessels and thrombosis, are almost invariably found in diabetes, according to G. Hoppe-Seyler (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2). In patients not suffering from glycosuria, arteriosclerosis may also occur, but here the islands of Langerhans are spared, while in diabetes they may be entirely sclerotic or filled with hyaline masses. There seems to be a direct proportion between the severity of the diabetes and the extent of lesion here. Pancreatic changes secondary to cirrhosis of the liver consist chiefly of a perilobular or periacinous connective tissue proliferation which does not involve the islands. In syphilis, the vessels are generally much altered, and the connective tissue strands are thick and penetrate into the interior of the lobules. The condition of the islands will depend upon the presence or absence of sugar in the urine. Other forms of cirrhosis of the pancreas are granular atrophy, analogous to granular atrophy of the kidney and interstitial pancreatitis, starting from the pancreatic ducts. No matter what the type of lesion, the close relation between the condition of the islands and glycosuria, is always evident. Anatomically these resemble closely the glomeruli of the kidneys. Diabetes must thus be regarded as a special manifestation of arteriosclerosis. Other manifestations of arteriosclerosis need not be present, though frequently enough thickened radial arteries, hypertrophy of the left ventricle and albumin in the urine, may be found. If intercurrent disease or arteriosclerosis of some other organ does not kill, the patient will eventually die in coma, since the condition is progressive. Early stages are generally overlooked, since other signs of arteriosclerosis predominate at first. It is odd that even with advanced pancreatic diabetes, symptoms of deficient pancreatic digestion, such as fatty stools or an abundance of muscle fibers in the feces, are usually absent. Alimentary glycosuria can be induced more readily in persons whose vessels are normal, especially if alcoholism is present. The author believes that the test for alimentary glycosuria should be made in all cases of arteriosclerosis, since in its early stages it may be possible to check the process.

Ossification of Lymph-Nodes.—O. Lubarsch (*Virchow's Archiv*, Vol. 177, No. 3), has examined a large number of lymph-nodes at autopsies and has been surprised to find ossification of frequent occurrence, especially when the glands were formerly the seat of a tuberculosis. He believes that the bone results from

metaplasia of the connective tissue capsule which surrounds the cheesy focus and that the deposit of lime salts in the necrotic tissue forms the starting point. Cartilage and bone are also frequently found in the tonsils, in part due to fetal inclusions of cartilage, in part as a result of the presence of inflamed connective tissue. A. Rückert (*Virchow's Archiv*, Vol. 177, No. 3), believes, however, that bony tissue within the tonsils is derived solely from rudiments of the second pharyngeal cartilege, and that metaplasia of connective tissue does not play a prominent part.

Pathology of Myxedema.—A case of myxedema studied by A. I. Abrikossoff (*Virchow's Archiv*, Vol. 177, No. 3), presented the following interesting lessons at autopsy: The thyroid was completely replaced by fatty and connective tissue, developed undoubtedly after birth, since contours, size and position of the gland were normal, and an acinous distribution was still evident. The hypophysis showed considerable hypertrophy of its anterior portion, the chromophile cell particularly manifesting an increase in size and number, with considerable colloid degeneration. These changes were probably compensatory, since the nuclei were well-preserved and the vessels were everywhere filled with blood.

Chemistry of Tuberculous Tissue.—A large amount of tissue, which had undergone complete cheesy degeneration, was subjected by E. Schmoll (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2), to chemical analysis. He concludes that the chief percentage consists of coagulated albumin, whose proteid nature is undoubted since pepsin and hydrochloric acid will convert it into albumose and peptone, and since hydrolytic decomposition will give rise to the typical principles of proteid disintegration. The elementary analysis also resembles that of albumin. The ordinary solvents of proteids do not dissolve it. Nuclear elements could not be detected since these are probably dissolved out as the cytoplasm coagulates.

The Pathology of the Cells of the Sensory Ganglia.—In order to clear up many of the conflicting points concerning the changes that occur in the sensory ganglia cells following section or injury of their peripheral axons, a series of experiments were conducted by E. Lugaro. (*Arch. Ital. de Biol.*, May 31, 1904). The classical type of these changes, as originally described by Nissl, consists of a breaking up of the chromatic substance into distinct masses, beginning at the center of the cell and proceeding toward the periphery, frequently not affecting the marginal portion of the cell, and also accompanied by a displacement of the nucleus toward the periphery with an occasional irregularity of the nucleus. The various types of cells in the sensory ganglia may be considered specifically distinct, both anatomically and physiologically. Following section of the peripheral nerves, these different kinds of cells show a reaction different in type, intensity and promptness. Cells of the same type in different animals react differently. The smaller cells are the first to react and the first to undergo repair. In the plexiform ganglion of the vagus the reaction is more plexiform than in the spinal ganglia. Even though the nerve is put into such a condition that it cannot reestablish its primitive connections with the periphery, reparative processes nevertheless take place always in the sensory ganglia, but not in all the cells. Some of the cells may degenerate. The proportion of the latter varies in the different animals and in the different ganglia, being greatest in the plexiform ganglion of the vagus. The destructive processes that affect the peripheral fibers do not cause any reactive phenomena in the cells that surround the capsules of the nerve-cells; the proliferation of the former and their ability to devour the nerve-cells are really determined by stimuli other than those associated with the reactive phenomena in the nerve-cells. If the lesion of the nerve prevents any re-establishment of its peripheral connections, the corresponding cells, although undergoing repair, present a marked progressive atrophy. In the reaction of the cell to an injury of its neuraxon, the nucleolus becomes hypertrophic. This change, probably an index of the increased trophic activity of the cell, continues during the stage of repair and consecutive atrophy. The cellular modifications caused by section of the nerves represent a rejuvenescence of the cell—an exceptional awakening of the trophic power of the cell during the regeneration of the nerve fiber. These morphological modifications are analogous to those that occur in the embryonic development of the cell, as well as those that are found in the lower orders of animal life.

Cytodiagnosis in Nervous Disease.—Wherever cerebrospinal fluid is to be examined for cellular elements, it should be centrifuged for at least fifteen to thirty minutes. After the supernatant fluid has been poured off, the sediment is taken up by means of a pipette, but sometimes, where no sediment is visible, it is better to pour the entire residue on a glass slide. The simplest and best stain to use is methylene blue. Three to five lymphocytes in one field of the microscope with a magnifying power of 400 to 500 may be regarded as normal, while in pathological conditions four to five to many dozens may be counted. O. Niedner and G. L. Mamlock (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), have examined the sediment in a number of nervous diseases and report as follows: In nine cases of tabes, hyperlymphocytosis was found five times; in one the lymphocytes were increased only when a gastric crisis came on. Lymphocytosis was also present in four out of six cases of hemiplegia and each one of these four gave a distinct history of syphilis. In a number of other severe, cerebral conditions, the cells in the spinal fluid were not increased. A microscopical examination of the sediment is thus of the greatest value in the diagnosis of syphilitic or metasyphilitic affections of the central nervous system.

THERAPEUTICS.

Urotropin and Helmitol.—The properties of urotropin, as uric acid solvent and urinary antiseptic, are almost solely due to small amounts of formalin, which are split off both in acid and alkaline solution. It is, therefore, invaluable in acute and chronic cystitis, pyelonephritis, pyelitis and posterior urethritis, in typhoid infection of the bladder, to prevent nephritis in scarlet fever, after the use of instruments and in phosphaturia. The urine of patients who have taken urotropin will become ammoniacal less readily if kept than normal urine. A comparatively new compound is the methylene-citric acid salt, known as helmitol. It is said to be superior, since decomposition occurs less readily and the acid radical itself is a derivative of formalin. According to A. Nicolaier (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 1 and 2) helmitol does not, however, possess any therapeutic advantages, for cases that do not yield to urotropin are not much benefited by this derivative. It is more expensive, since larger doses are required,

and the acid radical occasionally manifests toxic properties such as gastro-intestinal disturbance and eczema. The bromine water and Joressen tests for formalin in the urine are equally marked after corresponding doses of the two drugs, and the urine after the use of helmitol does not inhibit the development of bacteria any longer than with urotropin. Since helmitol is twice as expensive as urotropin, the latter should be given in all cases.

Nasal Hydrotherapy.—Nasal hydrotherapy has for its object a modification of the condition of the mucous membrane by more or less prolonged contact with medicated fluid or by the action of the temperature of a fluid; the removal of the more or less viscous secretions in the rhinopharynx; the obtaining of a violent propulsive action to drive out a foreign body or a pathological product formed in situ. With these objects in view, A. Courtade (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July-August 1904), defines the terms balneation, irrigation and douche as follows: Balneation is filling the rhinopharynx with mineral, medicated, or waters with a modified temperature without a continuous current. Irrigation is represented by running liquid with feeble pressure, allowing no stagnation of the liquid, as in balneation. Douche signifies an elevated pressure made use of to expel foreign bodies, or pathological products. The irrigation is the ordinary form, the douche being rarely used. In acute coryza, if taken within twenty-four to forty-eight hours of the onset, a half liter irrigation of saline or borated water used morning and evening at a temperature of 48° to 50° C., is often able to stop the coryza in two days; if delayed longer, a cure is not to be expected, although the cause of the disease will be lessened in severity. In the period of decline, when the secretion is mucopurulent and thick, a morning irrigation with saline or alkaline water, an evening irrigation of borated water at the temperature indicated, renders a great service in cleaning out the mucopus adhering to the walls of the pharynx, and constitutes the best prophylactic treatment against otitis media resulting from acute rhinitis, and also prevents extension of the process to the pharynx and bronchi. In coryza good results are reported from the irrigation with milk morning and evening. One case is reported where 25 liters were employed instead of milk, which was used as early as 1864 by Thudicum, a solution of boric acid, chloride of zinc and bicarbonate of soda aa 0.40 centigram, dissolved in a half glass of tepid water, may be used as a nasal bath. Ozena is undoubtedly best treated by the nasal irrigation. The benefit seems to be derived from the quantity rather than the kind of liquid employed. To give one of these large irrigations of 25 liters, two liters of the fluid are sufficient, the reservoir being filled and refilled with the medication already used. An excellent plan is to allow the fluid to run slowly at first to soften the crusts, followed by a more forceful stream to remove them.

The Treatment of Dysentery.—The results of eight years' experience in the treatment of dysentery as practised by the author in the Far East are embodied by J. S. Kolbassenko, in No. 21, *Prak. Vrach.*, 1904. In the way of prophylaxis he considers as the most important the following: (1) avoid overexertion; (2) supply the most nutritious food available, and (3) the best drinkable water. In cases of slight or moderate severity the diet should be fluid and bland; apply a warm abdominal bandage made preferably with alcohol of 70° to 80°. If possible give the following emulsion:

℞ Emuls. ol. ricini 180.0
Tinct. iodi ..... gtt. xx.
Ol. menthæ
Ol. cinnamomi aa..... gtt. vi.
Chlorof ..... gtt. xv.
Syr. emulsivi..... 20.0
M. D. S. A tablespoonful every hour.

Instead of this, one or two tablespoonfuls of castor oil may be administered, with 8 to 10 drops of the iodine tincture or with iodine starch. This is best prepared from potato starch, and presents an almost tasteless and odorless powder of a dark violet or almost black color that is palatable enough even for children. The author relies greatly upon this preparation in the subsequent treatment of the disease, for administered together with the castor oil the iodated starch is evidently not decomposed in the stomach and reaches the smaller and possibly also the large intestines unchanged. It is here that decomposition begins, the liberated iodine acting principally as an astringent and rendering harmless the specific as well as the other toxins that are at the bottom of the trouble. This iodated starch, by the way, is an excellent remedy also in ordinary diarrhea, in infantile diarrhea, as well as in typhoid fever. The preparation should also be introduced into the rectum either in the form of small warm starch injections, or with the addition to them of 20 to 30 drops of tincture of iodine, once or twice a day, to be retained for ten to twelve minutes, or more if possible. After the acuteness of the attack has subsided somewhat, but the ulcerations in the intestines have not disappeared (as evidenced by tenesmus, etc.) the author obtained splendid results from the administration of a following suppository: ℞ Ichthyol—gttas ii—viii (in accordance with the sensitiveness of the intestine to this drug); xeroform, gr. v—viii; antipyrine, gr. vi—viii; bismuth subnitr., gr. xv.—xx.; lanoline and cacao butter each q. s. ut ft. supposit. D. t. No. 10 S. One or two daily. In case of great intestinal irritability it is advisable to add from gr. 1-3 to gr. ½ of the extract of opium or belladonna. As to the action of the drugs the author considers ichthyol as an astringent and disinfectant, xeroform as exciting a favorable effect on the ulcerated surfaces, antipyrine as a powerful astringent and analgesic, and the bismuth reinforcing the action of the xeroform; the suppository has also been found of undoubted benefit in hæmorrhoids. He also obtained good results from warm or even hot injections of water and 20 to 30 drops of creolin, which is too irritating at times, and cannot be retained by the bowels; and it becomes necessary to diminish the dose to a few drops per injection.

Syphilis in the Higher Apes.—A report was published several months ago containing an account of the successful inoculation of a chimpanzee with syphilitic virus from human sources. D. Lasar (*Berl. klin. Woch.*, July 25, 1904), now states that he also succeeded in inoculating a second chimpanzee with virus obtained from the first. The resulting eruption was in the form a generalized papular syphilide and is well shown in a number of photographs which accompany the article. The animal died shortly after with acute miliary tuberculosis and the diagnosis could be verified by microscopical examination of the papules. Lassar claims that this observation demonstrates conclusively that infection of the higher apes with syphilis is possible, and that this animal may serve as a test object, as it were, for the virus and perhaps permit of the production of a specific serum.

The Medical News.

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THE PROPHYLAXIS OF MALARIA.

The subject of malarial infection is one of no little moment to the physicians of the United States. According to the best information obtainable, the last Census Reports, that in the year 1900 14,874 deaths occurred from this disease with a general incidence of 14.9 deaths in every thousand.

While the incidence of deaths per thousand in 1900 is as 14.9 to 22.1 for the decennial revision of 1890, 14,874 deaths in one year from a preventable disease is a severe indictment of the community, from which the physicians cannot hope to escape entirely.

It is known that for the census year 1900 the death rate from malarial fever was nearly ten times as high among the colored as it was among the whites; and that the highest death rates were in the Southern States, while in the States of Maine and Vermont there were no deaths from malaria in 1890. In all those States, called "Registration States" by the director of the census, because of the completeness of the reports kept by their respective health boards, the death-rate from malarial fever decreased very markedly. But in the non-registration States, particularly the South, the mortality remained higher than it should.

In view of the recent epidemiological work of the various European commissions, the experiences detailed in the recent discussion on the prophylaxis of malaria, held at the last meeting of the British Medical Association, should not pass without comment.

"It is unnecessary," said J. W. Stephens, "to devote sole attention to pools, to miasms, to breeding places, etc., the *Anopheles* itself might be disregarded, but the attention of the physician should be exclusively concentrated on the "*infected Anopheles.*" We are, as a body, only beginning to teach the lesson that malaria is a contagious disease, and that, for the tropics at least, the native population, particularly the child population, carries the organism in the blood, and frequently without showing any signs of its presence. It is this apparently healthy but highly infected population which is the great source of malarial parasites, and the great danger. Of the methods of prophylaxis, four deserve special mention. These measures are antilarval, mechanical use of wire netting, quinine prophylaxis and segregation.

The antilarval method is fundamental and if thorough drainage can be effected, it is sufficient, but economically it often assumes such stupendous proportions as to be impracticable. As a system of sanitary reform, however, it should be carried onward as a steady continuous policy. Petroleum sprinkling is a temporary makeshift; the water removal should be made the nucleus of the attack.

Mechanical prophylaxis by wire netting has been demonstrated to be very highly efficient, both by the Italians, and by the Japanese in their recent war procedures. They have shown the remarkable results that in a particular regiment the malarial patients diminished from 2,000 in 1900 to 256 in the first six months of 1903. It is said that even the sentries wore veils and gloves at night.

Quinine prophylaxis is attended with success, if we are to accept the opinions of many that discussed the question. The German investigators claim results from the use of fifteen grains of quinine repeated on two consecutive days, and it seems certain that quinine *per se* is not a cause, of the so-called blackwater fever.

Segregation of the infected individual is the most logical of the recent methods of prophylaxis. This is a procedure comparatively easy in operation, although at times it may cause a great amount of discomfort.

Such is the outline of the results arrived at in this recent discussion. Should its lessons be taken to heart, we may hope for a still further reduction in the mortality of malarial fever in this country.

PUERPERAL ECLAMPSIA AND RECENT PROGRESS.

The mystery of the causation of eclampsia has always remained one of the alluring problems to which obstetricians in every generation have applied themselves. Its recent discussion at the American Medical Association in the Section on Medicine (see Society Proceedings in the Medical News, p. 1223, June 25, 1904) shows that it still remains a baffling mystery, although some new light has been thrown on its etiology and perhaps also on its treatment.

The most important feature of the discussion was the emphasis laid on the fact that so-called eclampsia undoubtedly consists of more than one type of pathological process and indeed probably represents a group of affections of very various nature and very differing significance. There seems to be no doubt that in certain cases of so-called eclamptic convulsions there is nothing more than a set of reflex convulsive attacks, brought about in highly neurotic individuals by intense irritation of important nerve endings within the abdomen. It is comparatively easy to understand that as convulsions occur in children as the result of a reflex irritation due to the cutting of teeth, so in older persons of unstable nervous equilibrium, corresponding convulsive seizures may take place. It is by no means absolutely necessary that the patient should have previously exhibited a marked neurotic disposition. Pregnancy is a condition that easily lends itself to the bringing about of an irritable condition of the nervous system.

There seems no doubt that in certain individuals so-called eclamptic convulsions must be considered to be frankly hysterical in origin. When eclampsia develops shortly before or just after the birth of the child and is limited to one or two seizures without any serious preliminary symptoms and without important after-effects, it is not unlikely that in many cases the convulsive attack is of a true hysterical character. Anyone who has seen hysterical convulsions, particularly certain of the cataleptic seizures of major hysteria, will not be surprised that such attacks should, in the midst of the excitement of labor, be considered to be eclamptic. It is possible for such a seizure to occur without there having been any very telltale symptoms of hysteria beforehand, although usually there will be found to be a distinct family heredity of neurotic disposition. Some of the many and various remedies which at different times have been recommended as positively curative for this always annoying complication (their name is legion) undoubtedly owe their reputation to their apparently successful employment in cases of this kind. While the condition may for the moment seem very serious it has all the favorable prognosis that a neurotic condition always has and there are no complications or sequelæ likely to do permanent harm to the patient.

On the other hand, the failure of practically all methods of treatment in certain severer cases of eclampsia shows that the true nature of this affection has not yet been discovered, and that the theories of causation so far advanced are probably incomplete. It used to be considered that patients who exhibited a large amount of albumin during the course of their pregnancy were very likely to have eclamptic seizures. Obstetricians of large experience tell, however, that they have frequently followed such patients carefully, keeping them under the most minute observation, in order to avoid accidents, and have failed to see any symptoms of eclampsia develop. In fact, it has come to be generally recognized now that it is not large amounts of albumin in the urine, but instead small, but persistently present, quantities of albumin, which may be followed by a true eclamptic attack, or a series of them. For a time also it was thought that eclampsia always meant that renal insufficiency had been present for some time with a consequent accumulation of excrementitious material in the system. Careful observation has shown that the estimation of the urates and uric acid over long periods does not give any sure indication as to the probable occurrence of an eclamptic attack and that even a marked reduction in the total solids excreted, while it may serve to indicate the approach of nephritic symptoms, does not necessarily signify the approach of eclampsia. Anuria has been known to occur with death in coma without ever a symptom that might be called eclamptic.

Certain of the fatal cases of eclampsia seem to be due to an increase of pressure within the skull. This is usually the result of edema of the brain, which may be caused by the kidney insufficiency of nephritis. Just why some cases present the tendency for edema of the brain to

occur while others do not, remains one of the mysteries of individual peculiarity. At the recent meeting at Atlantic City, Dr. Robert N. Willson, of Philadelphia, presented some cases in which the diminution of intracranial pressure by means of lumbar puncture brought with it distinct relief from symptoms. It did not, however, cure the patient, and in all of them a distinct amount of edema of the brain was found to be present post mortem.

In the discussion aroused the possible connection between acute yellow atrophy of the liver, the pernicious vomiting of pregnancy, and eclamptic seizures was suggested. Recent post mortem observation has shown that in all of these conditions a specific and characteristic degeneration of the liver cells is present. In the most advanced stages this constitutes the so-called typical acute yellow atrophy. In less advanced cases, lesions that evidently represent initial stages of this same pathological condition are present. How serious some of them are may be best appreciated from the severity of the clinical symptoms, pernicious vomiting and eclampsia, with which they seem to be directly connected in the relation of cause and effect. Investigation along this line of observation may lead to the discovery of the true pathological basis of these severer conditions which has so far been very obscure. Such cases are rare enough even in hospital practice, and as the lesions spoken of are characteristic and comparatively easy of recognition, it would seem that practitioners of medicine anywhere throughout the country who have opportunities to make autopsies on such cases should not miss the occasion to add their quota of information on this important subject.

PROLONGATION OF CONVALESCENCE.

Three years ago the medical world was surprised by a declaration of Sir William Broadbent, in a discussion of typhoid fever at the annual meeting of the British Medical Association that convalescence from typhoid fever should last for at least a year and in many cases longer. It is easy to understand that so serious an illness as typhoid fever and one which so frequently calls for the exercise of all the resistive vitality of the patient, needs more than the scant month or two, that is sometimes allowed for recuperation. On the other hand, there are very few physicians notwithstanding the authority of Sir William Broadbent, who would consider that more than three months is necessary before a patient, who has recovered from typhoid fever, may be allowed to go back to his former occupation.

At the recent meeting of the American Medical Association, at Atlantic City, this question of prolonged convalescence after typhoid fever as well as after other infectious fevers, came up in the discussion on arteriosclerosis. As we approach our maximum incidence of the disease in the autumn months, it seems well to recall the purport of that discussion. There was a unanimous belief expressed that it is especially on the circulatory system that the toxins of infectious disease are likely to produce their most serious and enduring effect. Unfortunately when there is question of strain upon the circulatory system, the heart is usually considered to be the only element likely to be seriously affected and the arteries are apt to be neglected. At the end of typhoid fever all patients are warned of the absolute necessity of not sitting up suddenly in bed. The practice of gradually raising the head of the bed so as to accustom the heart once more to pumping against the force of gravity, has become widespread. As a consequence of these precautions sudden death at the beginning of convalescence from typhoid fever are rarer than they used to be.

However, the other dynamic factor in the circulation, the arteries, are usually not treated with so much consideration. When arteries lose their elasticity it is well known that the heart must do double work. The active contraction of the arteries is quite as important for the continuance of the circulation as the heart itself. It is also known that the heart suffers to such a degree from the toxins of infectious disease that a certain amount of fatty degeneration is almost the rule. This takes place in the muscular coat and it seems not unlikely that the same structure in the artery suffers if not to the same degree at least to some extent. The arteries recover more slowly than the heart, because their blood supply is not so abundant and their nutritional processes not so rapid.

Hence the necessity for prolonged convalescence after a continued fever, such as typhoid. Dr. William S. Thayer, of Baltimore, pointed out that in very many cases of arteriosclerosis typhoid fever is one of the features of the patient's history. In his observations there is only one other infectious disease, rheumatism, and this has of course an acknowledged reputation for producing serious effects upon the circulatory

system, that is noted more frequently in previous histories of arteriosclerosis patients than typhoid fever. His statistics seem to furnish a clinical demonstration of the theoretical and pathological considerations which have been advanced as emphasizing the necessity for prolonged convalescence.

Of course it will not be easy to persuade the busy men and women of our generation that a year to eighteen months should be given solely to more perfect recuperation when they have already been kept from their occupations for some six to ten weeks during the course of the disease itself. But medical insistence will find many arguments to influence them. The most interesting feature of the results produced by modern progress in medicine is the increase of the length of average life. Five years, at least, has been added to the length of a human generation in the last half century. The too strenuous life is, perhaps, the most serious factor in opposition to further progress in the same line. The overzealous worker must be taught the important lesson that the gain of a few months just now may mean the loss of many vigorous years a little later in life.

At the present time too many people are carried off by any serious illness that attacks them after the age of forty-five. Usually, in these cases, where there is not some distinct organic affection, a degeneration of arteries is at the bottom of their lack of resistive vitality. The persuasion that this is frequently due to infectious disease and the neglect of sufficient convalescence therefrom is now very common among clinicians of large experience. There is opportunity for a distinct improvement in medical practice that will save not a little of after-suffering and incidentally prolong life.

Typhoid fever, of course, is not the only affection the sequelæ of which are to be feared. There is no doubt in the minds of many conservative clinicians that the modern coal-tar treatment of rheumatism, by freeing patients from pain sooner than formerly, has been one reason for more frequent permanent heart crippling and arterial degeneration after rheumatic fever. After the so-called ordinary diseases of childhood the tendency of parents is to send children back to school just as soon as permission can be obtained for them to return, that is to say, as soon as the Board of Health considers that they are no longer in danger of spreading the disease. This practice is undoubtedly fraught with no little risk to the child's developing organism and to prevent it the family physician should demand a longer period of convalescence. If this were done we should hear much less of measles and whooping-cough as a predisposing cause of tuberculosis. In fact the resistive vitality of young patients is so much lowered by these so-called trivial diseases, that a subsequent infection, which ordinarily would be thrown off readily, finds favorable soil for growth. There is in this important matter of the prolongation of convalescence a special field for the family physician and the general practitioner of medicine that cannot fail to be fruitful of good for this and future generations.

ECHOES AND NEWS.

NEW YORK.

Reception to Visitors at Academy.—Next Thursday evening, October 6, 1904, a general reception will be held at which many distinguished foreign confrères will be present. The profession of the city are cordially invited to attend and to extend their welcome to our colleagues from foreign lands.

Columbia University.—The following is the list of the newly appointed professors in the medical department: Gorham Bacon, M.D., Professor of Otology; Joseph A. Blake, M.D., Professor of Surgery; George E. Brewer, M.D., Professor of Clinical Surgery; James R. Hayden, M.D., Professor of Genito-Urinary Diseases; Arnold Knapp, M.D., Professor of Ophtholmology; Samuel W. Lambert, M.D., Professor of Applied Therapeutics; Harry McMahon Painter, M.D., Profesor of Clinical Obstetrics; Frederick Peterson, M.D., Clinical Professor of Psychiatry; William K. Simpson, M.D., Professor of Laryngology, and John S. Thacher, M.D., Professor of Clinical Medicine.

The following appointments of adjunct professors are also announced: Frederick R. Bailey, M.D., Adjunct Profesor of Normal Histology; Eugene Hodenpyl, M.D., Adjunct Professor of Pathological Anatomy; Russell Burton-Opitz, M.D., Adjunct Professor of Physiology, and Francis Carter Wood, M.D., Adjunct Professor of Clinical Pathology. On Saturday, October 8, a reception by the President to the new appointees will be held in Earl Hall, from four until six o'clock.

The Eastern Medical Society.—The first open meeting for the season of the Genito-Urinary Section of this society will be held on Tuesday, October 4, at 8 P.M., at Clinton Hall. The paper of the evening will be "Ureteral Catheterization, with Special Reference to the Treatment of Pyelonephritis Catarrhalis," by Dr. Winfield Ayres. Discussion by Drs. W. J. Pulley, Follen Cabot, Frederick Bierhoff, Ferd. C. Valentine and possibly others. Cases will also be presented.

Dr. Lederle on Food Adulteration. Dr. Ernst T. Lederle, who is at present in Germany, prepared a paper on the above subject for the International Congress of Arts and Sciences at St. Louis. It was in part as follows: "An important field is now opening to the sanitarian in the investigation of manufactured food products. The extent to which

commercial adulteration and substitution is now practised would be absolutely incomprehensible to the layman. Competition in trade has become so keen and the substitution of inferior constituents in foods so general that the honest manufacturer has hardly a chance to succeed. The use of injurious preservatives has also been practiced to a scandalous extent. The only remedy for this evil condition will be the passage and enforcement of a Federal pure food law. Such a measure has already been before Congress, but in the absence of an aroused public opinion, the mysterious influences which bar the way of much good legislation at Washington have been able to kill it. Much the same opportunity is offered in a campaign against the vendor of patent medicines and secret nostrums. Few people understand the extent to which these articles undermine the public health, and there has been little or no attempt to assume official control over their production and sale. The remedy is official control. Makers of patent medicines, nostrums, pills, etc., should be required to place upon each bottle or packet the exact ingredients it contains, and should be prosecuted for any deviation which can be shown to be detrimental to the health of persons using the remedy, or designed to perpetrate upon them a commercial fraud."

The University and Bellevue Medical School.—The following new appointments for the University and Bellevue Hospital Medical College are announced for the coming year: Dr. George P. Wallace, to be Assistant Professor of Pharmacology; Dr. Herman A. Haubold, to be Clinical Professor of Surgery. A lectureship on pathological chemistry, recently endowed by Dr. Herter, has been awarded for the present year to Dr. Phœbus A. Levene, of the Pathological Institute on Ward's Island. The enrollment of the entering class of the Medical School is more than twenty per cent. larger than it was on the same date last year. Immediately upon the completion of the new medical laboratories, a part of the present Carnegie Laboratory will be set apart for a students' library and reading room.

PHILADELPHIA.

Smallpox Hospital Closed.—The smallpox building at the Municipal Hospital has been closed for the first time in five years, no new cases having been received for four weeks. Director Martin considers the return of the disease as a remote possibility, chiefly because of the house-to-house vaccination kept up during the summer by the medical inspectors. This is to be continued indefinitely.

To Suppress Smoke Nuisance.—The smoke nuisance ordinance goes into effect October 1, and preparations have been made to enforce its provisions. A report has been made on each of the 5,991 buildings possessing steam equipment, specifying if hard or soft coal is used and if smoke-consuming devices are employed.

Addresses by Foreign Physicians.—On Friday, September 30, the students and faculty of Jefferson College were addressed by Dr. Lauder Brunton, F.R.S., formerly lecturer on Therapeutics in St. Bartholemew's Hospital, London, and Prof. Dr. Oscar Liebreich, Professor of Pharmacology in the University of Berlin.

Almshouse Bids to be Readvertised.—Director Martin has requested Director of Public Safety Smyth to readvertise for bids on the new Almshouse, the old specifications calling for a building inadequate for the needs of the city. The plans, prepared under a former administration, are to be materially changed. Councils are also to be asked to change its name from the Home for the Indigent to the Home for the Aged and Infirm.

Jail for Sellers of Impure Milk.—Five milkmen, convicted for selling adulterated or watered milk, have been fined by Judge Barrett from $50 to $75, and sentenced to jail for periods varying from ten to twenty-five days. The grand jury has found indictments against 27 men for selling adulterated Hamburg steak. Food Commissioner Warren is highly pleased with the way the courts are dealing with the men apprehended by his department.

Pathological Society.—The Philadelphia Pathological Society held its first meeting for the season on September 22. Dr. D. J. McCarthy showed specimens of tumors of the choroid plexus and discussed their nature and histology. Drs. David Riesman and A. G. Ellis exhibited specimens consisting of a primary carcinoma of the stomach with secondary extension to the liver and pancreas. Officers for the ensuing year were nominated.

No Exhibits at the Pittsburg Meeting.—At the meeting of the Medical Society of the State of Pennsylvania, held at Pittsburg, September 27 to 29, the usual custom of having an exhibition of books, instruments, drugs, etc., was dispensed with. This was believed to detract nothing from the interest of the meeting as the pharmaceutical exhibit was always composed largely of patent remedy compounds.

Discussion on the Purification of Water.—At the meeting last week of the Franklin Institute, the subject for discussion was "The Use of Copper Sulphate as a Germicide for the Purification of Potable Water." John W. Hill, Chief of the Bureau of Filtration, made the statement that the water as it will be supplied the city after the completion of the filtration plant will be absolutely pure and will not need the addition of copper sulphate to render it free from typhoid bacilli. Director Martin said that the Department of Public Health, in doing what it had toward the use of copper sulphate, was striving for the purification of the water now being served. He is a firm believer in filtrated water but does not advocate sitting quietly by and letting the scourge of typhoid continue while the filters are being completed. The experiments in the laboratory are for the benefit of Philadelphians until they are served with pure filtered water. Most of the speakers agreed that the use of copper sulphate in far greater quantities than are recommended for purifying the water would be harmless to the general population.

The Care of the Insane.—The Association of Superintendents and Trustees of Institutions for the Insane in Pennsylvania held a meeting at the South Mountain Asylum on September 22. The meeting was the largest ever held, the attendance being 28. The inspection of the buildings and grounds and the condition of the 800 insane was a revelation to many of the members. Almost every inmate partly supports himself by labor on the farm in connection with the institution. Papers at the meeting were read by Drs. Robert H. Chase and J. M. Murdoch. Officers elected are: President, Dr. John B. Chapin, Philadelphia; Vice-President, Dr. H. B. Meredith, Danville; Secretary, Dr. M. S. Guth, Warren. The next meeting will be held at Polk, in May, 1905.

Positions at the University.—The position of assistant in bacteriology in the Laboratory of Hygiene, University of Pennsylvania, and the Thomas A. Scott Fellowship in Hygiene in the same laboratory, are vacant for the year 1904-1905. Further information may be obtained from the director of the laboratory.

CHICAGO.

Shorten the Time from the Cow to the Baby; a Plea for Twelve-Hour Milk.—Commissioner of Health, Dr. Arthur R. Reynolds, of this city, presented a paper on this subject before the Section of Public Health of the International Congress of Arts and Sciences, at St. Louis. In introducing the topic, Dr. Reynolds said that State laws and city ordinances prescribed requirements for dairies, milch cows and the constituents of their milk and cream offered for sale. It had been stated, he said, that Chicago could get milk within twelve hours from the time of milking, but that it was usually twenty-four or thirty-six hours old before delivery. The thirty-six-hour old milk was held to be positively harmful to the young in all cases where the milk was not bottled, but shipped in bulk. Dr. Reynolds continued: "Old milk not only starves the young, but it poisons them, causing diarrhea, 'summer complaint,' etc., and the excessive mortality among the young—especially during hot weather, which hastens souring of milk by favoring the growth of the bacteria. Milk is the principal article of diet for children after they are weaned until they are four or five years old. It is the sole article of diet for infants who cannot be nursed by their mothers. Milk, in the diet of adults, does not fill so important a place. Old milk or poor milk may be used for coffee and for table use generally by adults without any great harm, for the quantity used at any time is small compared to their total diet. All milk intended for the use of children should be bottled in the country, immediately after having been thoroughly cooled. The bottles should be put in cases, packed with broken ice, and so shipped to consumers within twelve hours after bottling, and at a temperature below 50 degrees. Milk bottled in the city cannot rank with the country-bottled milk, because it is shipped to the city in cans without being iced, and because after the cream has risen during the transit the butter fat cannot again, without the greatest pains, be thoroughly intermingled with the milk so that each bottles receives its due proportion. Nor are the producing dairies, as a rule, under the rigid supervision that is insisted upon by those who bottle in the country.

Milk Supply of Chicago.—To sum up the most important results of personal investigation of a number of dairy farms from which Chicago receives its milk supply: (1) An increasing proportion of Chicago's milk is delivered to the consumer within twelve hours after milking. The bulk of it, however, is from twenty-four to thirty-six hours old before delivery. There is no insuperable reason why it should not all be delivered within the shorter period, and every effort of the department is being made to this end. (2) There is much room for improvement in the condition of milk production on nearly all the dairy farms visited, except those under the direct supervision of a few large contracting firms. The dairy inspectors of the department are engaged in visiting this class of farms, explaining to their owners the necessary requirements, reporting upon their conditions, and recommending the exclusion of their product from the Chicago market if, after a reasonable time, they fail to conform to these requirments. (3) It costs more to produce clean milk than dirty milk—therefore cheap milk is, prima facie, impure and unwholesome milk, and the housekeeper who buys it is helping to perpetuate unclean conditions of dairies and helping to swell the death rate of the city by having her babies die off from disease caused by stale and impure milk. The consumer should make it an object to the milk producer and the milk dealer to furnish a clean, fresh and wholesome product, by being willing to pay a fair price for such product and by giving personal attention to its quality and proper care after its receipt.

P. and S. Lengthens its Course.—It has been announced that the College of Physicians and Surgeons (Medical Department of the University of Illinois) will extend its course to nine months. The term opened September 27, 1904.

CANADA.

Montreal General Hospital.—At the regular quarterly meeting of the Board of Governors of the Montreal General Hospital, held last week, it was decided to alter the constitution so as to leave the Medical Board free to engage the officers of the resident medical staff from outside of the British Dominions. The constitution now provides that no person shall be eligible for one of the positions of resident medical officer unless he is a graduate or licentiate in medicine in some university or college approved by the Medical Board. Formerly the clause of the constitution was to the effect that the physician must be a graduate or a licentiate of some university or college in "British Dominions." The receipts for the past quarter were $16,071, and the expenditure $21,521. Two donations were received during the quarter, one of $2,000 and the other of $5,000. Dr. J. Alex. Hutchinson read the medical report. During the quarter there had been in residence 781 patients. Of this number 67 died, but 26 of these died within three days of their admission, which would leave the ordinary mortality rate of 5.5 per cent. In the outdoor department there were 9,072 consultations as compared with 8,651 for the corresponding quarter of the previous year.

The Care of Inebriates in Ontario.—On September 19, there was held a meeting at Government House, presided over by the Premier of the Province, the Hon. George W. Ross, for the purpose of discussing the best plans for the care and treatment of the inebriate. Dr. A. M. Roseburgh, of Toronto, who has taken a deep interest in this subject for the past decade, delivered an address setting forth what had been done in the province toward this end, and he was followed by Dr. T. D. Crothers, of Hartford, Conn., who outlined a system for the care and treatment of inebriates. At the conclusion of his address, Professor McPhedran, of Toronto University, moved a resolution to the effect that the time was now ripe for the formation of a society for the reform if inebriates. A committee was organized for the purpose of organizing a society and another meeting will be held at a near date for the purpose of arranging a constitution and completing the regular organization of the new society.

McGill's Medical Faculty Opens for the Season.—Last week McGill Medical Faculty reopened for the session 1904-1905, when there was present Professor Abbott, of the University of Pennsylvania, to deliver the opening address. Dr. Abbott took for his

subject "The Study of Medicine and Recent Advances in Medical Science." Dr. Roddick, Dean of the Faculty, who has just returned from England, announced that while abroad he had interviewed Lord Strathcona, who had promised to contribute $50,000 toward the general purposes of the Medical Faculty of McGill. Regret was expressed at the approaching departure of Dr. Tait McKenzie, who will shortly take up his duties in connection with the University of Pennsylvania.

Canadian Medical Protective Association.—This Association was organized at the Winnepeg meeting of the Canadian Medical Association in 1901, with Dr. R. W. Powell, of Ottawa, as President. According to the third annual report just issued, it has a membership of 288, of which number Ontario makes up 217 and the balance distributed over all of the provinces with the exception of Prince Edward Island, which has not a single member. It is a most worthy organization and deserves the liberal support of the Canadian medical profession. At the recent annual meeting, held at the conclusion of the Canadian Medical Association, the constitution was changed to provide for a more practical and efficient management.

Dominion Registration.—Owing to the fact that the legislature of the Province of Quebec failed to ratify the necessary amendments to the medical laws of that province, the accomplishment of Dominion Registration has not up to the present time been arranged. The question was taken up again at the recent meeting of the Canadian Medical Association, and a strong resolution passed favoring the memorializing of the Quebec Government, the Quebec College of Physicians and Surgeons, as well as educating the medical profession in the province of Quebec, through the lay press, to the advantages of such a measure. It was further advised that Dr. Roddick, M.P., who has taken such a deep interest in the movement, should have at his command a special committee of three prominent and influential members of the Association in each province, for the purpose of exerting their influence upon the Quebec legislature to pass the necessary legislation as will make this most desired Roddick Bill or the Canada Medical Act, valid and effectual.

The Question of Patent Medicines at the Canadian Medical Association.—Dr. C. J. Fagan, of Victoria, B. C., read a timely and important paper at the recent meeting of the Canadian Medical Association at Vancouver. Having heard same the Association appointed Dr. Fagan as chairman of a Special Committee to bring in a resolution on the subject. This was done and it was recommended in same that the Canadian Medical Association should bring the matter to the attention of the Federal Government that the latter should take immediate steps to thoroughly investigate the nature and contents of all patent preparations on the market and to suppress the dangerous and harmful literature, all of which is deemed most prejudicial to the health of the community. The resolution carried unanimously and the matter will be laid before the Federal authorities at an early date.

Personal Items.—Dr. T. F. Underhill, of Vancouver, has been appointed health officer of that city.

Sir Lauder Brunton has been the guest of Professor McPhedran at Toronto, during the past week.

Dr. Charles O'Reilly, medical superintendent of the Toronto General Hospital, has been elected vice-president of the Association of Hospital Superintendents.

Dr. Breffney O'Reilly, only son of Dr. Charles O'Reilly, of Toronto, has gone to Vancouver to assume his duties on the C.P.R.S. Tartar.

The Medical Faculty of Toronto University reopens on October 4.

Dr. M. K. Church, of Merrickville, Ont., is dead at the age of seventy-six years.

The Winnepeg General Hospital has received a donation of $500 from Mr. F. W. Thompson, of Montreal.

The Provincial Royal Jubilee Hospital of Victoria, B. C., treated 144 patients during the month of August.

The Vancouver General Hospital has appointed an active staff of twelve practitioners and a consulting staff of five.

GENERAL.

Foreign Appointments.—Professor Lorrain Smith, of Belfast, and Dr. A. S. Grünbaum, of Liverpool, have been appointed to chairs of pathology, respectively, at the Universities of Manchester and Leeds.

Maryland School Bequest.—The courts have confirmed the bequest of $40,000 made by the late Dr. William H. Crim to the University of Maryland School of Medicine.

A New Library for Cooper Medical College.—The Cooper Medical College, of San Francisco, has received a bequest from Mrs. Pauline C. Lane, wife of the late Dr. C. L. Lane, which enables it to build a library.

Lane Lectures.—Dr. William H. Welch, of the Johns Hopkins University, has given the Lane lectures at the Cooper Medical College, San Francisco, his subject being "Infection and Immunity."

Dartmouth Medical School.—Among the new appointments are Dr. Percy Bartlett, A.B., Bowdoin, '92; M.D., Dartmouth, 1900; instructor in anatomy; Dr. C. C. Stewart, Pennsylvania, assistant professor of physiology; Dr. John O. Polak, lecturer at New York Post Graduate School and Long Island College Hospital, assistant lecturer on obstetrics.

Boston Items.—The addition to the Stillman Infirmary for an infectious ward is well under way; and in Boston the foundations have been put in for the new Medical School buildings of Harvard University.

Naval Medical School.—The Naval Medical School in Washington, began its regular course of instruction on September 30, with twenty student officers in attendance. The faculty of the school will be the same as last year, with the exception of Medical Director John W. Ross, who is on duty with the Panama Canal Commission. His place will be filled by Surgeon P. A. Lovering, who was recently detached from duty on the Asiatic station.

Officers American Academy of Ophthalmology.—At the Denver meeting of the American Academy of Ophthalmology and Oto-Laryngology, held August 24, 25 and 26, 1904, the following officers were elected: President, Dr. H. W. Loeb, of St. Louis, Mo.; First Vice-President, Dr. D. T. Vail, of Cincinnati, Ohio; Second Vice-President, Dr. Robert Levy, of Denver, Col.; Third Vice-President, Dr. Eugene Smith, of Detroit, Mich.; Secretary, Dr. Geo. F. Suker, of Akron, Ohio; Treasurer, Dr. Otto J. Stein, of Chicago; Councils, Dr. H. W. Loeb, Edw. Jackson, W. L. Ballenger, Casey A. Good, J. M. Ray, of Louisville. The next place of meeting will be decided upon by the Council and will be announced shortly.

Resolutions Concerning Death of Dr. Steinberger.—WHEREAS, We feel that in the untimely demise of our esteemed coworker, Dr. Victor Steinberger, we have lost a genial companion, an arduous worker, a progressive physician and an earnest and sincere colleague, therefore be it

Resolved, That we medical inspectors and trained nurses of the Department of Health, of the City of New York, Borough of Manhattan, at a special meeting held July 23, 1904, extend to his widow and to his family our heartfelt sympathy in the hour of their bereavement. May the remembrance of his affable personality, his conscientiousness in his duties, his devotion to his beloved ones and his uprightness of character serve to lighten their grief, to strengthen them in their affliction and be a blessed memory in the future. And be it furthermore

Resolved, That these resolutions, suitably engrossed, be presented to his widow and that a copy be published in the City Medical Journals. Jacob Sobel, M.D., Edward M. Thompson, M.D., E. Helen Knight, M.D., Otto A. Jahn, M.D., L. Marcus, M.D., Henry J. Blumensohn, M.D., and Thomas W. Neapsey, M.D., *Committee*.

Southern Medicine and Gaillard's Medical Journal, beginning with the October issue, are to constitute a consolidated journal. In negotiating the purchase of *Gaillard's Medical Journal* the editor of *Southern Medicine* has not been actuated solely by a desire to enlarge the subscription, though he does not claim to have been unmindful of the many advantages accruing from such an accretion. In 1897 the present editor of *Southern Medicine* established the *Georgia Journal of Medicine and Surgery*. On the first of January, 1904, *Southern Medicine* was thought to be a more appropriate name. *Gaillard's Medical Journal* was established at Richmond, Va., in 1886, by Dr. E. C. Gaillard, a Charlestonian, and a graduate, in 1854, of the State Medical College of South Carolina. Dr. Gaillard was a prominent surgeon in the Confederacy, and *Gaillard's Medical Journal* has always been considered a Southern journal, though for many years past it has been published in New York City. The records of both journals show them to have been harmonious in their aims and methods, and it is most fitting, therefore, that they should combine their several interests and resources to further those aims and improve those methods to the higher upbuilding of American medicine, and furthering the interests of the whole medical profession.

Professorship Fees in Germany.—According to the *Evening Post* the financial considerations involved in the calling of prominent men from one of the German universities to another are rarely made known. It is, however, reported semi-officially from Vienna that Prof. A. von Eiselberg of that university, called to succeed the famous surgeon König in Berlin, was offered a salary of 32,000 marks and guaranteed 25,000 marks in lecture fees. For family reasons, however, he declined this brilliant offer.

The Study of Medicine in Germany.—We learn from the *Evening Post* that a remarkable document has been sent by the executive committee of the National Medical Association to the 482 gymnasia and 131 Realschulen of the empire, with an urgent request for distribution among the graduates. It is an official appeal *not* to enter upon the study of medicine. The chief reason is the deplorable financial condition of an exceedingly large percentage of physicians. The determining facts adduced are (1) a surplus of medical men much beyond the demand; (2) the abrogation of the laws against practise by the incompetent; (3) legislation for the Krankenkasse. The increase in the number of physicians has been enormous, from 17,728 in 1876 to 24,225 in 1887 and 29,133 in 1902. The number has more than doubled in a single generation, and the prospects are that the "learned proletariat" in this department will grow still more in the next year, since women and the graduates of the semi-classical Realgymnasia are now admitted to the profession. A further reason for avoiding this study as given by the circular letter is the fact that the addition of a "practical" year to the course has made the expenses of preparation, already very costly, still more so.

International Medical Congress.—The fifteenth International Medical Congress will convene in the last week in April, 1906, in Lisbon. The preliminary program arranges for fifteen sections. The official language of the convention will be the French, but German and English will also be permitted in both the general meetings and in the sections.

Governmental Monopoly of Opium.—Entirely commendable is the action of the commission appointed by Secretary Taft in recommending control of the supply and sale of opium by the Philippine Government. This conclusion was arrived at after complete and careful study of the use and abuse of opium in Japan, China, Java, Formosa, and the Straits Settlements. The commission states that the use of opium in the Philippines does not at this time constitute as grave a social danger as it does in China and other neighboring countries, and on that account it is all the more important to stamp out the evil if possible, or to check it and restrain it within bounds. The Filipinos are becoming addicted to the use of the drug through its importation by the Chinese, 70,000 of whom are making every effort to propagate their nefarious business in the islands. In considering how best to control and check this traffic the commission considered five methods of action: High license, local option, farming, prohibition, and a monopoly, and decided that the last named was the practical way of dealing with the evil. All of these methods have been tried in the various countries visited by the commission and have been found wanting, the monopoly, however, in a less degree than any of the others. In Spain the farming system has been used solely for revenue purposes, a procedure which the United States does not consider justifiable from any standpoint. As for prohibition, its attempt among an Oriental people, many of whom are Chinese, would be quite as useless as is the effort among certain Occidentals to control the use of alcoholic beverages,—simply to encourage the evasion and transgression of unwise laws. The proposed registration and licensing of chronic opium smokers ought to have a decided deterrent effect on those who have not yet become habitués, realizing how hopeless these are, in so far as radical methods of treatment go on so vast a scale as would be required. As a corrective and educative measure all Filipino opium habitués are to be deprived of the right of franchise, and to be ineligible for any public office, municipal, provincial, and insular. Gratuitous treatment of all habitués wishing to free themselves from the opium vice is to be provided in the hospitals at Government expense. The method seems entirely rational and, in the light of knowledge and expediency, is the only fairly reasonable way of coping with the great curse of the far East.

Study Room and Book Psychology.—We quote with sympathetic feelings an editorial from our distinguished contemporary, the *Evening Post*. Speaking of the type of "Chair Sociologists," an apparently rampant type, they say: "The proper study of mankind is never without its enthusiastic votaries. Of late years, however, it has taken on more and more the sta-

tistical form. The philosopher of to-day has scant sympathy with such an idea as Emerson's, that every man carries in hieroglyphic the answer to those inquiries he would put. The inquiries the modern man would put he thinks to get answered by hunting up two hundred specific cases, classifying them, and concluding that truth lies with the division having the numerical preponderance," which, may it be interpolated, they label the "Normal Man." "It was in this wise that a pedagogical expert, if we recall the feat correctly, conducted experiments in the development of the artistic sense. After testing some thousands of infants with some hundreds of pictures, he announced to the world the surprising conclusion that young children preferred colored pictures to black and white. The Pauline maxim, "Prove all things," is, in this sense, of proving what everybody knew before, sadly overworked. We have heard, for example, the story of a prominent professor, an authority on child study, whose youthful son, reared though he was in accordance with the latest discoveries, proceeded to bombard a dinner guest with buttered biscuits. The first missile the guest received in silence, seeing that the family paid no attention to the occurrence. When the second caught him on the spotless shirt bosom, however, he opened his mouth to protest, but was interrupted by his hostess, who held up a warning finger, saying, "Hush, the professor is observing him in his wrath." From our inner consciousness, and such exhibitions as have come incidentally under our notice, most of us know, or think we know, what a person does when he is angry. But the careful scientist notes that he throws buttered biscuits. He would delight to compare this observation later with the case of another person who hurled a plate of soup. A Beloit College professor is the latest example of seeking wisdom in numbers. He has spent the summer pushing a wheeled chair over the St. Louis fair grounds, and from that "favorable viewpoint" studying the crowds and individuals there to be seen on parade. Sociology is the most wonderful of sciences, as we all know, but the question at once arises, "Why is the back of a wheeled chair an especially favorable place for studying it?" The investigator who lives for six months in a Bowery lodging house, spends the summer as a tramp, or digs in the subway, can at least say that he had a chance to know and observe people whom he would not have known and observed had he stayed at home. He can write a book about these people. Sometimes he can make it a very interesting book. The Beloit professor, however, has no such advantage. He has been observing all summer the backs of the necks of people whose faces he might have gazed upon if he had been strolling about the grounds wearing a silk hat and swinging a cane. It is hard to escape the conclusion that he could have studied them even better that way. When wheeling a most uninteresting subject, he may see a "type" full of suggestion, just turning the corner. He would follow if he were free, but in his menial station he must go on propelling the dull and humdrum while the exceptional slips away. Then, in any case, the people at the fair do not constitute a class or social group. They are a little of everything. Probably a hundred or so come from Beloit, and the professor could have scrutinized them from his study window. Students of the St. Louis crowds have already made one observation which really throws light on human nature. They have found a brisk demand for rented crutches among sound and sturdy men who are ashamed to let themselves be seen in a wheeled chair unless they display some ocular proofs of infirmity. That fact was first noted not by a trained observer, but by an ordinary pedestrian with no special mission. If our chair-wheeling psychologist makes other discoveries of equal value his summer will be well spent. Yet we cannot put away visions of the statistical method. "Of a half-hundred visitors who were charged five cents for a drink of ice water, exactly fifty manifested indignation." That has the merit of infinite pains to prove a useless fact which everybody might have known beforehand. Or we might get a better index to the crowd's mental condition from reading, "Of 817 persons who were shown Minnesota's butter statue of Father Hennepin discovering the Falls of St. Anthony, 43 showed pleasure, 112 evinced symptoms of actual dislike, while 662 were apparently affected in no way whatever."

OBITUARY.

Prof. Dr. Niels Finsen, the noted therapeutist, died September 24, 1904, at Copenhagen. Dr. Niels Finsen came into public notice for his discovery of a light cure for lupus, or tuberculosis of the skin, and other skin troubles. It has been known for a long time that sunlight is beneficial in such complaints. Finsen sought for the principle which makes sunlight fatal to germs, hoping to provide a cure which would operate on cloudy days and would intensify the properties of sunlight. He declared that he had found this principle in the violet and ultraviolet rays. He perfected an electric apparatus which shut out all other rays but these. With it was combined a most ingenious cooling apparatus. The Finsen rays have more than justified the faith of their discoverer in the treatment of lupus, but in other lines the results have not been encouraging. On the strength of his discoveries Dr. Finsen received the Nobel prize in 1903. This prize is given every year to the person who has done the greatest work for the advancement of mankind.

Dr. John J. Mackey, a well-known Brooklyn physician, died last week at his home at Bergen Beach, after a protracted illness. He was born in Dublin, Ireland, and when sixteen years old he entered the Medical School of the Dublin Catholic University, coming to this country a few years later with his parents. He was graduated from the Bellevue Medical College.

Dr. George S. Conant, fifty-one years old, died at his home, No. 148 East Eighteenth street, New York. He had been a sufferer from diabetes for many years. Dr. Conant was a graduate of the Bellevue Medical College.

Dr. John Purcell, eighty-six years old, died at Larchmont, September 26, at the home of his daughter, Mrs. Dowdney. Dr. Purcell was born in Ireland, and was for thirty years a well-known physician of New York City.

Remarks on Adenoid Vegetations.—Swelling of the cervical lymph glands is frequently the result of a disease in the pharyngeal tonsils, and it is not essential that both conditions should be due to scrofula. W. Lublinski (*Berl. klin. Woch.*, July 11, 1904) calls attention to the fact that the enlargement of the pharyngeal tonsil need not be so far advanced as to produce mechanical obstruction, but even a moderate degree of proliferation may call forth symptoms. These consist especially of extension of inflammatory processes into neighboring organs, such as the palatal tonsils, ears, eye and nose, which cannot be accounted for on mechanical grounds alone. Mention is also made of the chronic, constantly recurring form of cough, which accompanies adenoid vegetations and which he thinks is due to the dropping down into the larynx of secretions. Continuous febrile conditions are also associated with this condition.

SOCIETY PROCEEDINGS.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Seventeenth Annual Meeting, held at St. Louis, September 13, 14, 15 and 16, 1904.

The President, Walter B. Dorsett, M.D., in the Chair.

Address of Welcome, on behalf of the St. Louis Obstetrical and Gynecological Society, was delivered by Louis E. Newman.

David R. Francis, President of the Louisiana Purchase Exposition, followed the remarks of Dr. Newman by an interesting and instructive address.

Responses to these addresses of welcome were made by Dr. L. H. Dunning, of Indianapolis, Ind., and Dr. Herman E. Hyde, of Buffalo, N. Y.

Operative Treatment for Painful Menstruation in Young Virgins.—A paper with this title was read by Dr. William A. B. Sellman, of Baltimore, Md. The author pointed out the great necessity of giving relief to young unmarried women who suffered from painful menstruation. The means employed should not be of a character to unsex the patient or prevent her from bearing children or from fulfilling her marital relations. The operation should not be one which will endanger life or interfere with the woman's general good health. To illustrate the condition and to demonstrate the manner in which cases could be operated upon without unsexing the individual, and giving absolute relief from the suffering experienced, the author related a case upon which he operated the early part of June, 1904. The patient, Miss H., aged twenty-four years, a brilliant vocalist with a register of three octaves, had been unable to use her voice with any satisfaction for a long period on account of the pain developed in the ovarian region when attacking the high notes. June 7, 1904, under ether anesthesia, the author curetted the endometrium, removing a quantity of congested tissue from the cavity of the uterus. He then made an abdominal incision in the median line, and found both ovaries hyperemic and distended. Upon the left side he opened three good-sized cysts and upon the right side two medium-sized cysts. The Graafian follicles in each ovary were distended. He enucleated these with a sharp spoon curette, and scraped the walls of the cysts in order to destroy the germinal membrane. He then closed these openings with catgut sutures and used the same material with which to close the opening in the abdominal wall. The patient made an uninterrupted and rapid convalescence, and had not had the slightest amount of pain in the ovarian region, and no pain during the menstruations which she had passed through, since the operation. He thought very many gynecologists would have removed both ovaries under these conditions, and the result would have been the unsexing of the patient and probably the loss of her voice, especially in the upper register. Her voice had not been impaired in the slightest degree by the operation. The author showed three sizes of reamers devised by himself, which he had used for ten years in overcoming the condition of stenosis or obstruction where every other means failed. In not a single instance, when handled properly, had he witnessed any injury inflicted by them.

Dr. Herman E. Hayd, of Buffalo, New York, alluded to the importance of examination of these cases, and said even after an examination was made one might find that the most distressing cases were the ones that practically had no evident pathology. On a previous occasion, the speaker said, he read a paper on this subject in which he pointed out that retrodeviation of the uterus was responsible for much of the dysmenorrhea in unmarried women. If one upon examination should find a retroverted uterus, a prolapse ovary, a tender, sensitive tube, then there was a rational basis on which to work, but simply because a woman had a small os it did not follow that she was going to be the subject of dysmenorrhea, because it all probability most of these cases were simply due to an impoverished condition of the whole system. They were simply functional troubles, and had to be met accordingly. If, however, there was an obstructive dysmenorrhea, where there was a pinhole os, and usually these cases were associated with a congenital atrophic condition of the uterus, the small undeveloped uterus, probably one could institute some operative measures, and the interference which had been most successful in his hands had been dilation and the wearing of a stem pessary.

Dr. William H. Humiston, of Cleveland, Ohio, stated that dysmenorrhea was a common disturbance, and yet he had been unable to find a case that was not accompanied by an inflammatory condition of the mucosa. He had seen cases of narrow, conical os, with the patients menstruating without the least sign of distress, but the moment there was an inflammatory condition of the mucosa added to that, that moment the patients began to have painful menstruation. In cases of this kind he thoroughly dilated the uterine cavity, curetted, and had the patients wear an Etheridge pessary, closely watching them for several months, and if there was no accompanying disease of the appendages, the cure was decided and complete. But in these cases occasionally one would have a failure because he did not recognize an ovary which was smaller than normal, the cirrhotic ovary, which was hard to detect unless an examination was made under an anesthetic, and there was no relief afforded except the removal of these shriveled, corrugated, smaller than normal, ovaries.

Dr. D. Tod Gilliam, of Columbus, Ohio, spoke of the undeveloped condition of the uterus as a cause of dysmenorrhea. A great many men had come to the conclusion that it was not a superficial condition; it was not produced by the condition of the uterine mucosa, as a rule; it was not the result of stenosis of the internal os, but was due to the undeveloped, unripe condition of the uterine tissues.

Dr. Sellman, in closing the discussion, stated that he did not use his instruments in all cases, but only in a certain class. He would not use them in a case in which the dysmenorrhea was brought about by an inflammatory condition, but only in those cases where a gristly condition existed.

Pseudomembranous Monocystic Tuberculous Peritonitis.—Dr. H. W. Longyear, of Detroit, Mich., in a paper with this title, after defining this condition, reported three cases of the affection, and stated that the treatment consisted of abdominal section, with evacuation of fluid and the thorough washing out of all shreds and gelatinous masses with normal salt solution; thorough drainage by glass or rubber tubes, both abdominal and vaginal. This was to be followed by after-treatment consisting of frequent lavage, with a weak aqueous solution of iodine (tincture iodine, 1 dram; water, oi), until the pseudomembrane was disintegrated and the purulent discharge which followed had ceased. Internally, the rational treatment of tuberculosis, consisting of the use of creosote, cod-liver oil, etc., a supporting diet, and suitable hygienic surroundings. The prognosis was bad, al-

though a few cases might recover, if not too far advanced, after months of constant drainage and careful nursing.

Chronic Adhesive Peritoneal Sclerosis.—Dr. N. Stone Scott, of Cleveland, Ohio, stated that among the rarer abnormal conditions found within the abdomen, was one particularly interesting, and possibly more frequent than had hithertofore been suspected. This condition was progressive, yet was characterized by an absence of active symptoms, including ascites. In the early stages the peritoneum was rigid and contracted; later the connective tissue became excessively hypertrophied, with adhesions between the involved peritoneum and all viscera with which it came in contact. As soon as these adhesions interfered with the functions of any organ, symptoms referable to such interference supervened. When the involvement prevented some important organ from performing its necessary functions, death ensued. In an illustrative case cited by the author, only a circumscribed portion of the pelvic peritoneum was affected.

Relative Value of the Means and Methods Employed in Accouchement Force.—Dr. E. Gustav Zinke, of Cincinnati, Ohio, read a paper with this title, in which, after epitomizing the various views gleaned from the literature of the subject, he drew the following conclusions: (1) The graduated steel or vulcanite dilators and the ordinary branched or bladed dilators were mainly employed for the purpose of dilating the cervix or os preparatory to digital manual and bag dilatation. (2) The bag or hydrostatic dilators, of which the Champetier de Ribes balloon and its modifications were the most favored, should be employed only when time was not an important element in the case; when the cervix was thoroughly softened, partly or entirely effaced, and an easy introduction of the balloon possible. This form of hystereurysis was contraindicated in central placenta previa, and in eclampsia, mild or severe. If, in these cases, it was determined to empty the uterus, deep cervical incisions, vaginal or abdominal hysterectomy, promised the best results for mother and child. To prevent continuation of the cervical incision, a suture might be placed in the upper angle of the wound. (3) The manual dilatation of Harris and the bimanual (digital) dilatation of Bonnaire and Edgar. A soft and partially obliterated cervix and dilatable os were absolute prerequisites for this variety of uterine dilatation. It was to be preferred to hydrostatic hystereurysis when time constituted an important element. Under this method the life of the fetus was often lost and, unless great care was observed, sepsis, lacerations, hemorrhage, profound shock and sometimes even death of the mother might occur. (4) Deep cervical incisions and Duhrssen's vaginal hysterotomy were destined to play a permanent and important rôle in the management of forced labors in the future. Many of the cases now subjected to manual or balloon dilatation would be treated by cervical incisions. It was the method in the presence of sepsis of the vagina, because the operation was short in duration and could be performed under a continuous flow of an antiseptic solution. An intact cervix, whether hard, elongated or not, was always an indication for cervical incision. Vaginal hysterotomy was indicated principally when the cervix was the site of malignancy or extensive cicatrization. If there were a palpable difference between passage and passenger, the conservative Cæsarean section should be the choice of operation. (5) The indications for the conservative Cæsarean section had been so well defined by himself here and in previous papers, that it was needless to repeat them. Cervical incisions and Duhrssen's operation would, however, take its place in many instances, notably in cases of marked prematurity. (6) The Bossi and similar metal dilators, if they were not entirely needless, they were certainly very dangerous instruments. From what had been said, it was safe to predict that rapid and complete metal dilatation would never become a popular method; that sooner or later it would receive universal condemnation and thus reach its final and well-deserved destination—the lumber room of obstetrical instruments.

Dr. Henry Schwarz, of St. Louis, was glad to hear the author's experience with reference to Duhrssen's vaginal Cæsarean section, because personally he had had no experience with that method. He fully agreed with all that Dr. Zinke had said, except that he (Dr. Zinke) appeared to be too radical in some respects. He could conceive of exceptional cases of eclamptic convulsions or of placenta previa, in which Cæsarean section might be justifiable in proper hands and under proper surroundings. As a rule, in eclamptic convulsions Duhrssen's method should be the one of choice, and there could be very few exceptions where conservative Cæsarean section was indicated. As to Bossi's dilator, it had a limited sphere of usefulness. He had used it successfully in one case.

Dr. James F. W. Ross, of Toronto, Ont., said he had done Cæsarean section three times, with the recovery of the mother in each case, and the loss of the child in each case. He gave reasons why the children were lost in these cases. The question between Cæsarean section and the Porro operation was pretty well settled, and the conclusion had been reached that the latter, when Cæsarean section failed, enabled one to control hemorrhage. He had operated on two cases of rupture of the uterus, with recovery in both instances, after having performed the Porro operation, using gauze packing, and he thought this operation in these cases should not be adopted except for uncontrollable hemorrhage.

Dr. J. Henry Carstens, of Detroit, Mich., emphasized the point that many practitioners were too anxious to dilate the cervix in the class of cases under discussion. He had seen them use rubber dilators and dilators of all kinds in working around the uterus, for two or three days at intervals, and then finally had to send for some one to help them out of difficulty, or they had to call in counsel. It was a mistake to suppose that because a woman had a little pain at the approach of labor that she was actually in labor.

Dr. Zinke, in closing the discussion, said that whatever he may have said or written in the past on this subject and presented to-day came from a motive simply to do good in the future, and to get rid of a certain method of practice in obstetrics which had been the means of rendering families unhappy, and because he honestly believed that there was great room for improvement in this practice in spite of all that had been said against it.

Vaginal Cæsarean Section in Grave Cases of Puerperal Eclampsia.—Dr. J. Henry Carstens, of Detroit, Mich., said that mild cases of puerperal convulsions could be ordinarily controlled by the treatment generally advocated for this class of cases, but there was a serious grave form of puerperal eclampsia where one convulsion followed another in quick succession, and the patient finally died in spite of ordinary, and sometimes even heroic, treatment used.

This severe variety of eclampsia could generally be subdued by immediate delivery. This was accomplished generally by manual dilatation, the use of powerful steel instruments, like that of Bossi, but what was better still was the operation called vaginal Cæsarean section, which enabled the obstetrician to deliver the woman in about five minutes with little or no danger. In conclusion, he stated that (1) in grave puerperal eclampsia, as a rule, prompt delivery will save the patients. (2) That manual effort with the fingers and the hand was too slow. (3) Powerful steel dilators were not always at hand, and often caused serious injuries. (4) Vaginal Cæsarean section enabled the obstetrician to quickly and safely deliver the woman.

An Unusual Case With Many of the Symptoms of Appendicitis.—Dr. Magnus A. Tate, of Cincinnati, Ohio, narrated this case. The patient, a boy, aged seven years, was attended by Dr. L. Linss, of Cincinnati, for an ordinary attack of scarlet fever, from February 25 to March 18, 1904. March 21, Dr. Linss was called to see the boy on account of a swelling of feet and hands. On the morning of April 1, all edema had disappeared; urine highly colored, but normal in quantity, with no sugar, albumin or casts. That afternoon the patient had a chill, vomited and was suffering with a pain in the abdomen; temperature 99.5°. Pulse 90. April 5, the patient had two more attacks of vomiting; pain in the abdomen was constant, and he had not slept for twenty-four hours; temperature 102° F. and pulse 130. Dr. Wm. Johnson saw the case with Dr. Linss, and upon examination of the abdomen they found an uneven swelling which extended to the umbilicus, and over the right lumbar region. Upon palpation exquisite tenderness over the appendix was elicited. A diagnosis of appendicitis was made, but further consultation was asked for. The next day, April 6, Dr. Tate was called. When he saw the patient, six days after the initial vomiting spell and chill, the child had been crying and moaning day and night, and could not sleep; temperature 102° F.; pulse 132; very irregular; abdomen swollen, especially on the right side, and such marked tenderness that the child screamed if the slightest pressure was made over the region of the appendix. Bowels constipated and the urine highly colored. The following day there was no improvement, the pulse even worse; temperature remained at 102° F. Before placing the child on the operating table, a bed-pan was placed under him and he passed nearly a pint of urine. Chloroform was administered, and an incision was made on the right side two inches in length, over the most prominent portion of the swelling. It revealed a dark-colored sac and a number of adhesions. The incision was lengthened to three inches; some adhesions were broken down with the finger, but a few of them were so firm that they had to be cut. The enlarged opening gave a field of about two inches to work in, and the sac in appearance was not unlike that of a gangrenous bowel. They were at a loss to say exactly what it was, and as adhesions limited the field, gauze was packed about the opening, the child turned to the right side, and a half-inch cut was made into the sac. A dark-green fluid spurted out, which had a strong heavy odor of stale urine. About two quarts of fluid was evacuated, and the finger introduced into the sac, which proved to be the bladder. The opening in the bladder was sewed up, adhesions binding the bladder on to the abdominal wall and on the right side to the large and small intestines were broken up, and the enlarged thick-walled bladder dropped back into the abdominal cavity. The appendix and appendical region, except for the presence of some adhesions, were normal. An opening was left in the abdomen for gauze drainage, and the rest of the wound closed up. The subsequent history was that the bladder was emptied by means of a retention catheter for forty-eight hours; after that catheterization night and morning for three days. There was a gradual decrease in pulse and temperature, and in seven days both were normal. On the third day a quantity of fluid drained out through the opening, but this gradually ceased, and on April 23, sixteen days after operation, the abdominal wound had closed, and the patient was now in good health.

Gunshot Wound of the Abdomen.—Dr. John D. S. Davis, of Birmingham, Ala., reported a case of gunshot wound of the abdomen, with eighteen perforations, in which he resorted to intestinal resection of five feet, seven inches, with use of metal button, followed by recovery of the patient. The patient, a woman, twenty-three years of age, while attempting to place a rifle in the rack on the wall, the gun was discharged with the muzzle about eight inches from the abdomen. The bullet, a 32 caliber, entered in the median line midway between the umbilicus and the symphysis pubis, ranging backward, upward and to the right, and was deposited in the muscles of the back on the right side. The ball in traversing the abdomen, made eighteen perforations of the gut, and two cuts in the intestine that went to the mucous membrane. Sixteen of the perforations and the two sero-muscular wounds were in the small intestine, and two pertorations in the transverse colon. The bullet cut two mesenteric arteries which caused a large amount of blood to collect in the abdomen. Patient was shot at 4:30 o'clock in the afternoon, February 2, 1904, and was brought a distance of eighty miles on a freight train to Birmingham, by her physician, Dr. W. O. Watson, and carried to Hillman Hospital. At nine o'clock the essayist saw the patient and had her prepared for section. Temperature at this time was 102° F., and pulse 130. She probably had fever at the time she was shot. A seven-inch incision was made in the median line, a large quantity of blood turned out, and the bleeding vessels controlled by hemostatic forceps. The two perforations in the transverse colon were so near the mesenteric border that he stripped up the mesenteric serosa and turned the mesenteric border in as though the two openings, one on each side, had been one large opening, including mesenteric border, and closed with interrupted silk sutures. He then brought the mesenteric folds back and sutured over the wound. Four perforations and two sero-muscular cuts in the small intestines were turned in and closed with small loop silk sutures. Two perporations were situated so close together that they had to be closed by flexing, pouching or looping the mesenteric border, the bowel being bent on its convexity so the two wounds could be closed as one large wound by interrupted longitudinal loop sutures,—suture with axis of bowel. There were two other perforations that could not have been closed by suture, but the openings were between the mesenteric perforations on one side, and eight on the other, and he thought it better to lose one more foot of intestine than to do two resections. He resected that part of the intestine containing the ten mesenteric perforations (67 inches), including the two large perforations in the convexity of the ileum and closed with the third sized metal button. The resected bowel and its mesentery were removed, the vessels

ligated, and the gap in the mesentery closed with interrupted silk sutures. The abdomen was flushed with hot normal salt solution; plain gauze drainage was used, and the abdomen closed with through and through silkworm-gut sutures. The operation lasted one hour and a half. Drainage was removed on the second day. Patient passed the button on the twenty-first day, and left the hospital March 1, 1904. A week later she was doing housework, and was now perfectly well. Dr. Davis also exhibited the metal button which was made in four sizes, like the Murphy button, with the exception that it had no spring. In his opinion, the spring served no good purpose, was an additional expense, and made the button more difficult to apply.

He also showed a metal horseshoe button which he had made to take the place of his catgut horseshoe plates, which he had been in the habit of using to close large wounds on the convexity of the bowel without destroying the mesenteric border by resection.

Clinical Reasons for Advising Early Operations in Fibroid Tumor of the Uterus.—Dr. Rufus B. Hall, of Cincinnati, Ohio, discussed this subject under three heads: (1) Which cases should we advise not to be operated? (2) In which cases should we advise late operations? (3) In which cases should we advise early operations?

The author discussed at some length the clinical history of patients in order to form a correct conclusion.

1. If a patient between thirty-five and thirty-eight years of age, suffering from a fibroid tumor of the uterus, the tumor and uterus combined making a mass not larger than a cocoanut, had no symptoms other than profuse metrorrhagia, the whole period not extending over five or six days, and she was free from pain except at her menstrual periods, it would be wise and judicious not to interfere surgically. But this patient, during her entire menstrual life, should be considered an invalid by her physician and should report to him at once if her symptoms became aggravated.

2. If she suffered pain in one or both iliac regions at other times than at her menstrual periods, the cause of the pain should be discovered at once and corrected. On the contrary, if her menstrual period was prolonged to ten or twelve days, the loss of blood amounting almost to a hemorrhage, and this hemorrhage could not be controlled or mitigated by the usual internal medication, and rest during the period, the advisability of an operation should be considered.

3. Prolonged and severe uterine hemorrhage had not been considered a sufficient reason for advising an operation. A patient suffering from a tumor as large or larger than a cocoanut, who had profuse bleeding at each menstrual period and the period was prolonged for eight, ten or fifteen days, as it frequently was, was in considerable danger. It was the author's experience that a large majority of those patients in whom the hemorrhage could not be controlled by medicinal remedies in two weeks, came to operation sooner or later. They could frequently stand off the operation two or three weeks, or in some instances longer, but the anemia was profound, and if some complication arose in the tumor, ovaries or tubes, making an immediate operation necessary, they were in the worst possible condition for it. The chances for a successful operation were greatly diminished. Therefore, when the hemorrhage could not be controlled within a few months, these patients should be advised to have the operation made before the anemia was pronounced. These symptoms, however, were not of so much importance as others, but if permitted to continue for many months they caused profound anemia and lowered vitality, and a high mortality followed the operation. He regarded hematoma, complicating these tumors, as the gravest complication the surgeon had to deal with in the management of the late cases. His records showed that only one patient in seven operated upon for fibroid tumors, where pus tubes were present, developed peritonitis after the operation; while five in every six of those operated upon in which hematoma of the ovary existed, suffered from peritonitis following the operation for removal of the tumor. The speaker had notes of one case of a woman suffering from a fibroid tumor about the size of a cocoanut, who ceased to menstruate at forty-seven and all symptoms attributed to the tumor disappeared. He removed the tumor when she was thirty-six years old, after it had been causing trouble for six months, and it had malignant disease well advanced in it. Other similar cases were cited. His experience in removing these malignant fibroid tumors had been that within a year or two after the operation for removal of the tumor, the patient had a recurrence of malignant disease in the pelvis and abdomen, and succumbed within a few months.

Shall We Remove All Fibromata of the Uterus on Diagnosis?—Dr. Thomas B. Eastman, of Indianapolis, Ind., read a paper with this title. After quoting freely numerous writers on the subject of the removal of fibroid tumors, the author stated that in the 117 cases upon which he had operated for fibroid tumor of the uterus, complications which bade fair to result eventually in death were encountered in 43 cases. Hydrosalpinx, either unilateral or bilateral, five times; suppurating dermoid cyst, three times; sarcoma, once; parovarian cyst, once; necrosis of tumor, eight times; cystic degeneration of ovaries, three times; ovarian cyst, four times; intraligamentous development of fibroid, three times; pyosalpinx or salpingitis, seven times; hematosalpinx, once; cystic degeneration of the tumor, once; myxomatous degeneration, three times; adeno-carcinoma of body of uterus, twice. Among the more prominent complications, appendicitis was encountered once. In addition to the complications inherent in the uterus and its adnexa proper, there were those arising from the pressure of the mass upon the bladder, rectum, ureters, and the persistent anemia resulting from prolonged hemorrhages. In the writer's 43 complicated cases, as well as in those of other writers on this subject, it was a significant fact that those complications which were inherent in the tumor, and which presaged the most certainly fatal results, were those of such character as to preclude a positive knowledge or ofttimes even a suspicion of their existence prior to operation or even a microscopical examination. This, then, was the arraignment of the uterine fibromyoma, and in the mind of the author justified their removal in all cases, except in so few as to scarcely merit attention. Should not all fibromata be removed upon diagnosis, not for the harm they were now doing, but against the harm that they might do in the future? As far as the danger was concerned, the removal of a fibroma was attended with as little danger as the average abdominal section, and he was not unmindful that the removal of the uterus from a comparatively young woman was not a thing to be lightly considered. The results obtained by various operators warranted

one in classing it among the safe operations, the mortality being in the hands of skilled men scarcely more than five per cent., a mortality certainly much less than would result from the policy of procrastination, which advocated delay until the forces of death plus those of the operation outweighed those of surgical interference. There was nothing so innocent as an innocent fibroid, and nothing so treacherous. When one considered the dangerous conditions into which an innocent fibroid might quickly change itself, and the ease and safety to the patient with which this innocent fibroid might be removed, the writer believed that the deduction was evident that all fibroid tumors of the uterus should be removed upon diagnosis.

Removal of Skeleton of Ectopic Fetus, Ulcerating Into Bladder, by Vaginal Cystotomy.—Dr. William D. Haggard, of Nashville, Tenn., reported the case of a white woman, aged thirty-one years, the mother of two children, who presumed herself to be normally pregnant and expected to be confined August 30, 1900. There was a continuous flow from the uterus for the first three months, and she had pain in the bladder and straining on micturition from the beginning of conception; but there was no history of rupture of the ectopic gestation. On June 20, at six and a half months, while lying down, she felt motion for the last time. Previously it had been unusually vigorous, more so than with her two other children. She was confined to her bed for three or four weeks with pain. She had more or less pain for about a year and she was a semi-invalid from weakness, pain and tenderness in lower abdomen. The enlargement of the abdomen had gradually, but appreciably, diminished. At the end of a year, pus first made its appearance in the urine, and the first day after getting up a bone, which was a fetal vertebra, made its exit through the urethra. During the second year she had been able to attend to all household duties, but occasionally would have several days of unusual bladder irritation, and pass a bone through the urethra. In the last four months she had passed all the long bones. Sometimes one would catch in the urethra. She would get hold of the free end and gradually pull it out. Commonly several days of comparative comfort would elapse before another one would set up irritation, and finally escape. In this way she passed eighty-five bones. Six weeks before admission to the Infirmary she felt the discomfort of another bone, and had not been free from it since, nor had any bone passed. She had been in bed two weeks with pain in the lower abdomen, which was very intense on motion.

Upon examination, the bladder was exquisitely tender, crepitated upon pressure. Bones were covered with phosphatic deposit. She described a small lump to the right of the median line and low down, the remains of the once six and a half months' enlargement, but this could not be made out on account of tenderness. The urine was loaded with pus and phosphates, and exceedingly offensiveness. Curiously enough, the woman did not void it oftener than every six or eight hours. Micturition was very painful and after the urine was voided, free pus was often expressed.

Under ether, October 31, 1902, the index finger was made to enter the urethra without much effort, and detected numerous bones, and communicating with the bladder, an opening into a lesser chamber on its right upper surface. There was a mass on the right to be made out bimanually, about as big as a small orange, and communicated with the bladder much as a bow window with partially drawn curtains did with a room. The uterus was retroverted and not much enlarged. The bones were much too large to be removed through the urethra, and an incision was made into the vesicovaginal septum. The finger in the bladder through the urethra located the bone, and it was withdrawn with a forceps introduced through the incision. In this way fifty-two bones were removed. Some were embedded in granulation tissue in the remains of the ectopic sac, and were with difficulty removed. The sac and bladder were freely irrigated, and an artificial vesicovaginal fistula established for drainage, after Emmet's method of sewing the vaginal mucosa to that of the bladder by silver-wire sutures.

The operation, while tedious, was not attended with shock. The bladder was irrigated twice daily afterward with boric acid solution, and the urine soon became normal. At the end of six weeks the artificial vesicovaginal fistula was closed successfully by silver-wire sutures. A cystoscopic examination with the Bransford-Lewis uretercystoscope revealed a healthy mucosa, and at the site of the former communication, only a slight reddish depression was seen. The ureteral catheter failed to disclose any depth to this aperture, and the patient was discharged eight weeks after the operation, and has remained well since.

Presidential Address.—Dr. Walter B. Dorsett, of St. Louis, Mo., President of the Association, stated that in casting about for a subject upon which to address the Fellows, he had for consideration the various operations for the relief of retrodeviation of the uterus. He spoke of the excellent operative work which had been accomplished within the past few years, so that what he had to say was more of a resumé of what had been done surgically. He discussed the methods of operation, saying that the different plans of accomplishing the reposition of the uterus might be classified according to the route selected by the advocates of each. They might be divided into extraperitoneal, vaginal, and intra-abdominal. After considering and discussing exhaustively the different methods in vogue, and indulging in some criticism of them, he stated that some of the methods did not merit the prominence they had obtained in the estimation of the profession at large, and for the reason that no one could arrive at a proper conclusion as to the best method of relieving the suffering woman without a careful study of the different methods. If one operation was in accord with the accepted idea of proper surgical technic, the other certainly was not. When one considered the great diversity of opinion as to which was right and which was not, without a proper appreciation of them all, one was certainly at a loss as to the choice of operations. In his opinion one should not consider any operation that did not contemplate the possibility of a thorough inspection of the adnexa from above the pubic bone. He would discard the entire class of operations that contemplated vaginal incision, either anteriorly or posteriorly, on account of the greater liability of sepsis as well as from the impossibility of anchorage to firm structures. While ventrosuspensions and ventrofixations had been condemned as unjustifiable, he took it that it was because only the fixation or suspension that was accomplished by anteverting the uterus and stitching the fundus, or, perchance, the posterior uterine wall to the abdominal wall, had been considered. It was reasonable to assume that this unnatural suspension or fixation was a causative factor in the production of lengthened adhesion bands for the entanglement of bowel as well as barrier to the proper development of the pregnant uterus. If, how-

ever, a lower segment of the anterior uterine wall was attached lower down on the abdominal wall, and omentum was allowed to drop to or behind the uterine fundus, the bugbears of necessary Cæsarean sections in labor cases and entangled bowel would be less feared. His own work in obstetrics and with this operation justified him in this statement.

Gunshot Wound in the Hip-Joint.—Dr. L. H. Laidley, of St. Louis, reported a case of gunshot wound of the hip-joint, but before doing so referred to the literature of the subject. The patient, aged eighteen years, a visitor and looker-on, of remarkably vigorous constitution and unexceptional health, was shot in a brawl on "The Pike" at the Exposition, on June 18. He was admitted to the Emergency Hospital, and within one hour an abdominal section was made. Upon examination, it was found that the ball had passed through the abdominal wall near McBurney's point, passing inward and slightly downward. On examining the viscera it was found that the ball had penetrated the cecum, making two openings, one in front and behind, passing down into the soft parts into the pelvis. These were closed by Lembert sutures, the abdomen cleansed of large quantities of blood and escaping contents of the bowel, and the abdomen closed with through-and-through sutures. The patient left the table within an hour under very favorable circumstances, the pulse being 72, temperature normal. The next morning he complained of great pain in the hip-joint, and was unable to move that limb. For ten days his condition was favorable, when he gave evidence of disturbance, especially about the joint. Chills and fever and increased pain suggested an examination with the X-ray, which would have been used earlier were it not for the fact that they had not been provided with such an appliance up to that time. On July 11, after the bullet was removed, an incision was made over the joint, disclosing the presence of pus outside of the joint, which was opened, showing that all of the head of the bone within the capsule was entirely destroyed and fractured; the acetabulum was likewise fractured and necrosed; following up the course of the cavity made by the bullet, the missile was removed, having lodged in the upper and outer margin of the cavity of the socket. The necrosed portions of this bone was chiseled out, and with a sharp curette were entirely leeansed, the dead portion of the head of the femur was also removed, the cavity packed with gauze and thoroughly drained. He afterward showed evidences of sepsis, which prompted the author on July 22, to reopen the wound, washing out the cavity, and introducing further drains. These were continually used up to the present time. About three weeks ago, the patient manifested evidence of acute nephritis. Upon examination it was found that he had a large quantity of albumin, with casts, which was evidently due to toxemia as found in scarlet fever. Since that time, by repeated cleansing of the cavity and thorough drainage, these evidences were disappearing, leaving the patient in a fair condition for recovery. The subsequent treatment would be to free the cavity and its surrounding structures of all suppuration, and by this means the author hoped to restore his patient to his normal health, probably leaving him with a shortening of the limb and perchance a degree of anchylosis. The patient was exhibited.

Strangulated Umbilical Hernia.—Dr. John Young Brown, of St. Louis, reported an interesting case of complicated strangulated umbilical hernia, and presented the patient.

Sterility Due to Retrodeviation of the Uterus and Its Treatment.—Dr. Herman E. Hayd, of Buffalo, N. Y., read a paper on this subject, in which he reported twelve pregnancies following the simple Alexander operation. Among other things, he stated that posterior displacements of the uterus were a very frequent cause of sterility. Pregnancy had frequently followed when such a uterus was placed in position, either by pessary or operative measures. He made an eloquent plea for the simple Alexander operation for a large class of suffering women who had simple uncomplicated retroposed uteri. In reporting the twelve cases in which pregnancy followed the simple Alexander operation, it was pointed out that the ligaments had stood the test of pregnancy and parturition. The canal was never opened *per se;* the internal ring and peritoneal cavity under no circumstances whatsoever. The author made a plea that the simple Alexander operation should be always employed for this special class of sufferers, in whom a pessary was not worn with comfort or willingly tolerated.

A Unique Case of Circumscribed Infection of the Placenta and Excessive Vomiting, the Cervix Uteri and Ovum Being Intact.—Dr. Albert Goldspohn, of Chicago, reported this case. There was a first pregnancy of three to four months with severe nausea, and much vomiting, almost from the beginning, with the gradual additional development of fever, and finally also severe chills and a scanty, foul discharge. There was no alteration in the shape and consistency of the cervix, or of the body of the pregnant uterus. The patient had a rapid pulse, and irregular, high temperature, and chills. The uterus was emptied. The membranes and ovum were intact. The edge of the placenta bore a circumscribed area of broken-down gelatinous tissue, with a very offensive odor. The author gave a brief review of the current views of the pathology of hyperemesis gravidarum and considered the rare etiological bearing of the above case.

Conservation of the Natural Resistance of the Patient in Surgical Work.—Dr. Robert T. Morris, of New York, in discussing this subject, said that the late Lawson Tait, was the first great exponent for conservation of the natural resisting force of the patient. Tait operated very quickly. He did as little as possible. He avoided handling viscera; he avoided disturbing the patient's mind with details of what he was about to do. He treated the most difficult case lightly, and patients looked at it in the same light. The repair of surgical injury depended primarily, secondarily and finally upon a proper hyperleucocytosis. The author used this term in a generic way to avoid elaboration of detail in statement. This was a manufacturing process carried on under the control and guidance of the sympathetic ganglia. The more the surgeon shocked a patient, the more he lessened the production of the leucocytes. The common ways for lessening the natural resistance of the patient were prolonged anesthesia, and unnecessary amount of anesthetic. All surgeons had seen patients who had been literally drenched with ether; they had seen patients carried to the danger line with chloroform. On the other hand, surgeons had watched the beautiful work of men who were expert in giving anesthetics, who began with nitrous oxide and a little oxygen, then changing to ether, who did it skillfully, quickly, nicely, and avoided shock which took away one element of resistance from the patient. Quick work was a point in which Tait excelled. Expeditious work conserved the natural resistance of the patient. Undoubtedly the resistance of patients was lessened in abdominal surgery with gauze packing. He said that if ten healthy policemen were taken from the street and a yard of gauze was introduced into the peritoneal cavity, those policemen the next day would not be in good condition. This being so, how could one expect a patient with septic appendicitis to be in good condition if a yard of gauze was

packed into the abdomen. If one drained quickly, got out of the abdomen quickly, disturbed the bowels as little as possible, made short incisions—in other words, leaving the patient alone as nearly as possible—he would make such a wonderful recovery that one might be accused of taking out a normal appendix. The tendency was to do too much.

If a surgeon pricked his finger in operating on a septic case, the surgeon died, while the patient recovered. Why was this? The patient was loaded with bacteria and toxins. The patient had called out all of his resistance factors; his hyperleucocytosis was under way ready to meet infection and bacteria. The surgeon had not called out his resistance factors, hence the bacteria proliferated rapidly and gained ascendancy. Was it necessary for the surgeon to get all of the septic culture media out of the patient's abdomen? No. All he needed to do was to turn the scale; there was a conflict between the bacteria and the leucocytes in that patient's case; the bacteria were winning; the leucocytes were losing. What did the surgeon do? By taking out most of the toxins and bacteria quickly, he turned the scale, turned the balance in favor of the leucocytes, and they went on and won. He took unfair advantage of them, but if he had labored conscientiously in accordance with text-books, and the best authorities, he would have put the patient out of commission where he should not have done it.

Officers for the Ensuing Year.—The following officers were elected for the ensuing year: President, Dr. H. W. Longyear, of Detroit, Mich.; Vice-Presidents, Dr. D. Tod Gilliam, of Columbus, Ohio, and Dr. John Young Brown, of St. Louis, Mo.; Secretary, Dr. Wm. Warren Potter, of Buffalo, N. Y., re-elected; Treasurer, Dr. X. O. Werder, of Pittsburg, Pa., re-elected; Councillors, Dr. James F. W. Ross, of Toronto, Ont., and Dr. Walter B. Dorsett, of St. Louis.

After the introduction and adoption of resolutions of thanks, the Association adjourned, to meet in New York City in 1905, the time to be fixed by the Executive Council.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-Urinary Diseases.

Stated Meeting, held May 18, 1904.

The President, James Pedersen, M.D., in the Chair.

(Continued from Page 624.)

Report of a Case of Suprapubic Bladder-Valve in a Case of Inoperable Carcinoma of the Prostate.—Dr. Ramon Guiteras reported the case of a man, sixty years old, who suffered from some stomach trouble for five years. He had had days when he vomited, was nauseated, had bad taste in his mouth, dizzy feelings, etc. He had no appetite and his sense of taste was lost, his bowels were constipated, he had pain in his back for weeks, and lost 15 pounds. He was placed upon suitable diet and his stomach treated with various medicines. After a few visits he disappeared. Six months ago he returned saying that when his stomach trouble returned he would take medicine and diet himself and he would then be better. In another month he had another return of his stomach trouble and complained of sour stomach, nausea and flatulency. Then he had pain in the back, diarrhea, desire to urinate five or six times during both day and night, and this was accompanied by pain and spasm. The pain and urinary symptoms kept up until the day of his visit. The abdominal examination was negative. The prostate was enlarged, indurated and extended to the right side. The urine was yellow, specific gravity 1,025, acid in reaction, no albumin, a few red blood cells, some pus and a few hyaline and granular casts. The residual urine was about two ounces. One or two weeks after there was incomplete retention, suprapubic pain, tenesmus and dribbling. Examination at the office showed sixteen ounces residual urine. The patient then went to some local physician who catheterized him three times a day. The residual urine decreased to six ounces and he was able to pass spontaneously three pints in twenty-four hours. A suprapubic cystotomy was performed and when the bladder was opened there was found a mass in the right side of the abdomen and the bladder wall infiltrated and it was evident that the growth could not be removed and, therefore, a Gibson operation was performed. A 33 Fr. catheter passed into the bladder and the fascia and skin was stitched around the tube. A No. 2 chromic silk was used for the upper layer and a No. 2 chromic for the floor and ordinary gut was used for the skin. Convalescence was uneventful. A catheter was tied in the urethra. It was two months before the valve seemed sufficient to permit the patient urinating through his urethra without leakage through the suprapubic opening, and during this time it was necessary to resort to a number of methods in order to see if he could not make the valve hold. The valve would not hold until it admitted a catheter not larger than a 15 Fr. The valve at this time was two and one-third inches in depth. Two months after he left the hospital and four months after the operation he voided seven or eight ounces of urine without leakage, but there was a residual urine of 12 ounces. Occasionally his bladder was washed out with nitrate of silver solution and kept on urinary antiseptics. Five months after the operation the patient died of an intercurrent pneumonia. The case was interesting to him at that time—six months ago—because he had another patient who appeared with symptoms similar to the one reported. In both cases there was a prostate affected with carcinoma and the prostates were about the same size. In each case he advised the introduction of the suprapubic valve because the growths were inoperable ones. In one instance the patient was operated upon, the prostate removed and the patient died within a few days. The other patient had the valve introduced and lived five months after the operation and then died of pneumonia. His experience in these two cases, coming on about the same time, led him to the conclusion that in cases of extensive malignant disease of the prostate it was better to perform the valvular operation than to attempt to remove the prostate by a prostatectomy.

A Modification of Syme's Staff for External Urethrotomy.—Dr. John Van der Poel presented this instrument, which was simply an enlarged tunnel sound with a curve, the sizes running to 24 Fr. The tunnel sound was enlarged to make a better guide in performing external urethrotomy, and acted better than the ordinary small-sized tunnel sound. It was very applicable in cases of extravasation. In doing Harrison's operation, this tunnel sound could be used either before or after the internal urethrotomy; it could be used as a staff upon which to cut. Dr. Van der Poel had found it particularly applicable in the clinical cases and at the dispensary where, with a very tight stricture, it was possible to pass a filiform and the tunnel sound over it. The size of instrument presented was No. 18.

X-Ray Tube for the Intrarectal Treatment of Tuberculosis of the Prostate.—Dr. Sinclair Tousey presented this tube, which was a modification of existing tubes with which were associated the names of Cossar in England and Cauldwell, Morton and

Cleaves in this country. The bulbous portion of the tube consisted of lead, glass opaque to the X-ray. In this there is no platinum disc, but a simple anodal wire at one side out of the way of the cathodal stream which was reflected from the concave aluminum cathode. This stream passed into a cylindrical prolongation of ordinary glass from which it emerged in every direction as diffused X-ray. This prolongation was cooled by an outer tube through which passed a continuous current of water. This portion of the X-ray tube was introduced into the rectum and was excited by a current of about four ampères for about three minutes. The heavily insulated conducting cords which were shown were stated to be a necessary part of the apparatus. The whole was held in hand and with these cords there was no sparking when the wires were touched by the operator or patient, or when the wires became crossed. Equally useful in those cases were high frequency current from the X-ray coil and d'Arsonval transformer. These were applied by means of electrodes consisting of vacuum tubes, some for external use over the hypogastrium and some for intrarectal use. The latter were insulated by a separate outer glass tube where it passed through the anus. The patient held a metallic handle connected directly with one pole of the d'Arsonval transformer and the vacuum electrode was connected with the other pole. When in operation 10,000 waves of violet and ultraviolet light passed down through the vacuum tube each minute and disappeared in the tissue of the patient. There was also a considerable amount of ozone liberated and carried in by the current. Then, too, a current of about 125 milliampères passed through the patient and an easily regulated amount of heat was produced at the point of contact of the glass electrode. The immediate effect of a single treatment was a very active elimination. The effect of a course of treatment has been observed in one case of well-marked tuberculosis of the prostate, which was reported at a recent meeting of the Medical Association of the Greater New York and in which several of our best genito-urinary surgeons, including Dr. L. Bolton Bangs, had regarded the diagnosis as positive. In this case the urine had been full of blood and pus and tubercle bacilli; and the patient had to urinate about 100 times a day. Now the urine contained practically no blood or pus, "only an occasional tubercle bacillus" (Fraser's analysis for two months in succession) and the patient was able to perform social duties requiring him to go five hours without urination and this without discomfort.

A Combined Catheter and Observation Cystoscope, with Demonstration on a Patient.—Dr. Follen Cabot said that the instrument he had just used in catheterizing the ureters of a patient in the adjoining room, was made along the lines of the Brenner and F. Tilden Brown instruments. Here, however, there was no separate chambers for the catheters in either the sheath or attached to the telescope. To support the catheters he had used the telescope and sheath in combination. This had never been attempted, so far as he knew, before. The advantage of this arrangement was, that he was enabled to accurately remove the cystoscope and leave the catheters in the ureters. Also the absence of the separate catheter chambers permitted him to easily clean the instrument. In addition, he had added to the end of the telescopic tube a short individual bridge to support the catheters while being introduced into the ureters. By this arrangement he had devised a curette; also a forceps for grasping any bodies in the bladder, and other instruments which could be made use of without change of tube. A good-sized urethral could be withdrawn from the bladder by this devise. In cases where catheterism was not indicated but an observation only required, the bridge attachment should be placed above the field of vision. It was thus out of the way.

Does Chronic Urethritis Cause Prostatic Hypertrophy?—Dr. E. L. Keyes, Jr., read this paper. He said that the theories of pathologists concerning the etiology of various diseases often aroused but mild interest on the part of the busy practitioner, but when etiological theory impinged upon therapeutic practice the interest of the clinician was stimulated. There were two theories concerning the causes of prostatic hypertrophy; the theory of testicular secretion with its train of castrations and vasectomies, which was a recent memory and the theory of prostatic inflammation which awaited practical confirmation. He gave a brief review of the theory up to the time of Ciechanowsky, who in 1896 published the first of a series of monographs and the conclusions of this conscientious and scientific series of pathological research were: (1) To pulverize through five chapters the remains of the theory of arterial atheroma; (2) to deny the existence of the prostatic adenoma; (3) to attribute the histological changes in both prostate and bladder to chronic inflammation of these organs; (4) to attribute prostatic atrophy and prostatic hypertrophy to similar inflammatory processes differently distributed. He quoted at length some of the experiments of this author from which after an exhaustive study of diseased prostates, Ciechanowsky inferred the very moderate and entirely justifiable conclusion that "The foundation for hypertrophy of the prostate gland and certain forms of prostatic atrophy consisted in chronic inflammatory processes, the etiological relation of which to virulent gonorrhea was not sufficiently proven at present. Yet the great frequency of gonorrhea in general, the great frequency of chronic prostatic inflammation due to it after all acute inflammation had subsided, and more particularly the conspicuous similarity of his observations to the pathological changes found in gonorrheal prostatitis, made it possible that such a relation existed. Whether gonorrhea really was the most freqent and important cause of hypertrophy of the prostate gland, would be the work of the future to decide." The fundamental facts discovered by Ciechanowsky had been verified by Greene and Brooks and by Crandon and were doubtless correct. The conclusion of all these observers was a very direct imputation upon the virtue of the hypertrophied prostate.

Until now the busy practitioner had had no reason to consider gravely the question whether prostatitis was the cause of prostatic hypertrophy, but since Ciechanowsky was so positive and since his demonstrations had been verified by competent, independent observers, it behooved the profession to set prima facie evidence aside and to criticise carefully the seeming freedom from inflammation exhibited by so many cases of hypertrophy of the prostate. Thus clinical evidence might be amassed either for or against the theory.

It happened that he had access to a set of case-books running back to the early sixties, and affording a wealth of clinical material recorded entirely without partisan spirit and detailing urethral histories for many years. From these he had been able to collect a number of histories bearing upon the subject in question; these he submitted with the belief

that they would aid in interpreting pathological facts. His first table of statistics comprised all the cases of which there was the remotest possibility that a previous prostatitis might have been the cause of prostatic hypertrophy. These cases might be divided into four classes: (1) Five cases of chronic urethritis, in which the prostate was not clinically hypertrophied. Three of these showed congestive symptoms of prostatic hypertrophy, but no residual urine, and at most were instances of possible beginning hypertrophy. In two others there was no symptom of hypertrophy, but the prostate was a little large in one and contained a small adenoma in the other. (2) Three cases with partial retention, in which the prostate was certainly not large so far as examination without operation could reveal. These three cases were assuredly instances of contracture of the bladder neck. (3) Three cases of deep stricture, so tight that prostatic symptoms were not revealed, but in which perineal section showed slight enlargement of the prostate. (4) Finally, there remained 15 cases of large prostate, which, with the three mentioned above made 18 cases of known prostatic hypertrophy after more or less prolonged chronic urethral inflammation. These 18 cases were found among 433 case histories of hypertrophied prostate. The number would doubtless have been larger had the cases been more closely questioned as regarded their early history. Their fewness enforces the fact that clinically, prostatic hypertrophy was not often associated with history or evidence of chronic urethritis. Among the 433 cases the degree of enlargement was noted in 192 or 16 per cent., and in the present series the degree of enlargment was noted in 12 cases, thus showing no deviation from the normal standard. The ages at which the symptoms of hypertrophy first manifested themselves were: In the 433 cases below forty-five years of age 3.2 per cent., while in the urethritis series, 5.5 per cent. began before the forty-fifth year. In the larger series 9.5 per cent. began below the fiftieth year, while in the urethritis series 16.6 per cent. began before that itme. In the larger series 14.1 per cent. began after the seventieth year, while in the urethritis series all began before that time. Thus the urethritis series showed prostatic hypertrophy at a slightly earlier age than did the others.

He had collected and tabulated 54 cases of chronic posterior urethritis from various causes, followed to an age varying from fifty to eighty-three years and not associated with prostatic hypertrophy. Among twenty cases of deep stricture, eight of chronic gonorrheal prostatitis and four of stone, the fact that the patients got entirely well under treatment, must be accepted as evidence that they were not suffering from any symptoms of prostatic hypertrophy; otherwise these would have appeared as the symptoms of the urethral or bladder condition were controlled. A third table comprised seven cases of stricture and fifteen of contracture of the neck of the bladder, these cases were all operated upon and the absence of prostatic hypertrophy proven by digital examination. These 54 cases, covering fairly every degree of duration and intensity to be looked for in chronic prostatitis, were sufficiently numerous to prove that chronic prostatitis did not inevitably lead to prostatic hypertrophy. Proceeding on a fair basis of comparisons he found that the percentage of hypertrophied prostates in the urethritis cases were not very different from the percentage in all cases. Thus at the fiftieth year, it stood 25 per cent. as compared to 19 per cent.; while, at the sixtieth year, it stood 33 per cent. as compared to 39 per cent., and, at the sixty-fifth and seventieth years, had fallen relatively lower.

He thought that the most surprising feature of these percentages was the fact that chronic urethritis seemed to have so little effect upon prostatic hypertrophy; if anything, very prolonged and active chronic prostatitis caused atrophy ratner than hypertrophy. In 32 cases the prostatitis lasted more than ten years; of these, 75 per cent. showed hypertrophy, while 12.5 per cent. showed atrophy of the prostate, and not a single one of them had a very large prostate. On the other hand, among the 39 whose prostatitis lasted less than ten years, none showed atrophy, 28.2 per cent. showed enlargement, and two of these were very large. Additional confirmation of this presumption was afforded by the absence of hypertrophy in old cases of chronic retention cystitis due to locomotor-ataxia and other forms of bladder paralysis.

He considered it impractical to draw inferences from the effects of short gonorrheas in early life to the prostatic hypertrophies of later years. It was generally conceded that 75 or 80 per cent. of adult males have had gonorrhea in early life, and that fully 90 per cent. of these have posterior urethritis. Inasmuch as less than 20 per cent. of those who pass their fifty-fifth year have hypertrophy of the prostate, one certainly cannot infer any very direct connection between the two. Additional evidence against such a view was afforded by the fact that prostatic hypertrophy occurred with such uniformity at a definite period of life, which might be called the beginning of the decline. To assume that the prostatitis found by Ciechanowsky and his followers took from twenty to thirty years to produce its effect, was assuming too much for our credence until some direct evidence should be brought forth to support such a theory.

Dr. Keyes said that the following conclusions very fairly expressed his views: (1) Among 433 cases suffering from prostatism, only 18 showed clinical evidence of previous prostatitis. (2) These 18 presented no marked difference in point of the size of the prostate or of the beginning of the disease to differentiate them from the remaining 415. (3) Comparison of these 18 cases with 46 cases of chronic prostatitis without hypertrophy showed that the proportion of such cases suffering from prostatic hypertrophy varied little from the normal. (4) Prostatitis lasting more than ten years probably tended to produce prostatic hypertrophy. (5) Therefore, if it is true that hypertrophy of the prostate was pathologically referable to inflammation, the clinical data suggested that this inflammation was either early gonorrhea of relatively brief duration or some obscure sclerotic process associated with advancing years. (6) The late date at which prostatic hypertrophy began and its infrequency, compared with that of early gonorrhea, made it seem clinically most improbable that early gonorrhea was the cause.

Dr. L. Bolton Bangs said that there seemed to be a great deal of confusion regarding the etiology of prostatic hypertrophy and, after thinking about, reading about and observing these patients for a number of years, if he had any views at all he said he was still open to conviction and willing to be led and taught. He was not satisfied that inflammation was the cause, certainly not the only cause, of enlargement of the prostate. It seemed to him as a result of his own experience, that there was a large class of patients who had led sedentary lives, and that a

sedentary life had much to do with prostatic hypertrophies. He said there was another class of cases in which the hypertrophy began in early life, in some cases before the age of forty, but they were not in sufficient number to warrant any positive statements regarding their etiology. But he had been so struck by this clinical fact that he began to make records of the early sexual life of these individuals and he came to the conclusion that there was a large class of cases in which the prostatic hypertrophy might be attributed to sexual overindulgence of different kinds. There were other cases that seemed to be due to specific inflammation or gonnorrhea, but as other factors were to be considered, he was still somewhat confused regarding the true etiology of prostatic hypertrophy.

Dr. F. Tilden Brown said that practitioners must all admit that they are unable always to interpret the stories by the patients; there was a personal element about the individual which carried conviction or the reverse. He said he had been impressed with the fact that a large number of these patients gave no gonorrheal history. The enlargements of the prostates met with in comparatively early life, during the middle part of sexual activity and under forty years of age, presented to him a different type and did not appear to be a true fibrous enlargement, but practically a turgescence, due to sexual overindulgence. Whether this condition was a factor in subsequent hypertrophy was doubtful.

Dr. Robert H. Greene said, that he had no particular theory bubbling up in his own mind, but that eighteen years ago, being dissatisfied with the vagueness of our knowledge of the pathology of urethral disease, Dr. Ira Van Giesen showed some urethras obtained at autopsies, showing that the formation of true stricture was preceded by a granulomatous condition, and this was preceded in turn by an acute inflammation. These observations have been verified by many and he believed had been universally accepted the world over as being the true condition which existed in the urethra in connection with gonorrhea. Dr. Greene said, he was then interested later on, some six years ago, in finding out how many times the urethra in its deep portion was affected by gonorrhea. There were 216 cases at Bellevue which supplied the required histories. In a large number of cases of gonorrhea the prostatic urethra was invaded. He believed that this fact that had been demonstrated by many men and universally accounted to be so. In making that series of observations at that time he had had the prostate massaged and the secretions examined and through clinical observations he had become firmly convinced for the first time that inflammation played some part in the causation of prostatic hypertrophy, and he read a paper at that time before the Section in Genito-Urinary Surgery of the Academy, expressing those views. He felt convinced that gonorrhea invaded the prostate and set up there inflammatory conditions. Then his friend, Dr. B. Lapowski, told him of Ciechanowsky's work referred to and the reader obtained a copy of it. After reading this work carefully, he went to Dr. Harlow Brooks, the pathologist, and asked him to do some pathological work in connection with his studies and Dr. Brooks consented. In a short time he was able to collect 100 prostates and Dr. Brooks, according to agreement, made the required examinations and their deductions were published after being read before the American Medical Association meeting in St. Paul, Minn., under the title "Fallacy in the Treatment of Urethral Disease." In this article the work of Ciechanowski showing the relationship between inflammation and prostatic hypertrophy was confirmed for the first time. Then more material was gotten together and Dr. Greene and Brooks presented an article entitled "The Nature of Prostatic Hypertrophy." Since that time Craston of Boston had done exhaustive work, and one or two men in Europe, and they all came to the same conclusion. So far as he was concerned, since the articles were published, he did not believe that any pathologist had gone to work without coming to the same conclusions that Brooks, Cienchanowski, himself and other writers had arrived at. It was considered a scientific axiom not to look for anything beyond a simple explanation of a given phenomenon, if that was sufficient, and it apparently was in these cases. As a rule, he said, referring to the remarks made by the reader on the cutting of sections, before the time of the people he had mentioned, he understood that sections had not been made by the investigators through the prostatic urethral part of the enlargement, but through the hypertrophied mass itself; consequently they misled the starting point of the process. When Dr. Brooks made his sections through hypertrophied prostates, he made them through the prostatic urethral portion of the enlargement; they all show scar tissue formation, either a plugging up of the follicles in the floor of the prostatic urethra which later on caused them to swell up and made an enlargement, or scar tissue formation deep down between the follicles and which squeezed them together. To repeat, there was an enlargement caused by a dilatation and distention of the acini, their mouths in the floor of the prostatic urethra being plugged up by scar tissue; in other words, referring to his original question, there was a condition of scar tissue formation in the urethra of the kind that produced a stricture and which had gone into the prostatic urethra in islands and there, the scar tissue not being dense enough to form a stricture, it produced a certain change in the prostate through its action in dipping down between or in plugging up the mouth of the acini, causing either an atrophy or an hypertrophy of the prostate, or a mixed condition of the two. Dr. Keyes, he said, referred to chronic inflammatory processes and Dr. Greene said, he did not exactly understand just what he meant; if Dr. Keyes meant an active inflammation accompanied with the discharge of pus and immediately associated with prostatic hypertrophy that had nothing necessarily to do with the condition; if he meant a chronic granulomatous condition, neither did that have anything to do with it. This condition, Dr. Greene said, of scar tissue formation in the prostatic urethra, which caused later on prostatic hypertrophy or atrophy, was caused by something, probably some cause that had been in action for years. It was natural to suppose it to be most generally due to gonorrhea, as that is, as the reader stated, the common cause of scar tissue in the more anterior portions of the urethra. It might be due to irregular sexual life, possibly to lithiasis. Whatever formed scar tissue in the deep urethra in any given case might be the cause of prostatic hypertrophy.

Dr. Harlow Brooks said that the question might be asked "What is hypertrophy of the prostate?" Years ago it was considered a neoplastic growth. He did not think that any pathologist or clinician, who had carefully studied the condition, would now say that it was neoplastic in nature. Then, what was it? Microscopically it was shown to be due to a hyperplasia of the normal elements of the prostate with certain exceptions, and these exceptions were to be found in the muscular tissue, which did not hypertrophy. What was the cause of the hyperplasia, or hypertrophy? He said that we all know that inflammations chiefly caused the hyperplasia in other organs and he thought this to be the

simplest explanation of what was found in these cases. If sections were studied carefully and the clinical histories gone over with care, he said, one would come to the conclusion that the hypertrophy was inflammatory in nature, but he did not know what caused the inflammation: this was beyond the domain of the pathologist and in that of the clinical investigation, and he did not consider it. He had never stated that the cause was gonorrheal, but simply that it was inflammatory. He said, that he was much disappointed that Dr. Keyes did not give a classification of all the cases of prostatic hypertrophy, classifying those cases in which urethritis was not present but in which hypertrophy was present, as well as those where the urethritis was present but not the hypertrophy. Were the other cases of prostatic hypertrophy presenting inflammatory of syphilitic disease? These were the questions which interested him particularly, and which he thought more important than the relation of any specific type of inflammation to the causation of the condition.

Dr. John Van der Poel said, that it was his belief that in all cases where the posterior urethra was affected the prostate was also. Regarding gonorrhea being a causative factor of prostatic hypertrophy, the figures varied from one-sixth per cent. to 90 per cent. and Frank, of Berlin, gave 33 per cent. His own cases showed a percentage of 39.

Dr. Edward L. Keyes, Jr., closed the discussion by stating that no doubt almost all cases of prostatic hypertrophy had had gonorrhea; but he did not think that prostatic hypertrophy and stricture should be clinically coupled. Strictures came on within a reasonable length of time after an attack of gonorrhea and prostatic hypertrophy an unreasonable length of time after. He said he had collected these cases in order to learn whether prostatic hypertrophy was always caused by gonorrhea, or not; and, as a result of his investigations, he did not believe that it was.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

Section on State Medicine.

(Continued from Page 618.)

Organization During Peace of Civil, Medical and Ambulance Aid.—Colonel Squire said: That in a war of any magnitude it is necessary to supplement the military organization for the care of the sick and wounded by civilian aid. Such aid is essentially of two kinds: (A) Surgeons, nurses, and orderlies, who are temporarily employed by the military authorities, receiving pay through the War Office. (B) Personnel and stores provided by voluntary subscription. Voluntary aid may be wasteful and embarassing or may be misapplied if no statement of probable requirements and no regulations for their employment have been previously laid down. Organization during peace is essential to ensure the best provision and to avoid unnecessary waste in war. Both classes of aid have occasionally been employed with our troops—for example, in the Crimea, Zululand, Egypt, and the Soudan—but without previous organization and with consequent waste The recent war in South Africa found us for the first time with the germ of an organization, not yet sufficiently developed to meet the requirements of a big campaign, but which nevertheless was of considerable practical value.

Other local issues were discussed:

First Aid in the Tropics.—Colonel T. H. Hendley spoke of the needs of the Indian service. The needs here were great. In six of the largest British Provinces of India—namely, Bengal, the Central and United Provinces, Bombay, Madras, and the Punjab —with an aggregate population of about 209 millions and an area of about 707,000 square miles, in the year 1901 there were 1,991 dispensaries, or one in 355 square miles, or one each for over 100,000 persons, at each of which there were actually treated annually an average of about 10,500 new patients. For some of these provinces the figures for police, mission, and railway institutions are included; and, in others, particularly in Bengal, there are numerous private dispensaries belonging to more or less qualified persons, who practise according to the Western systems of medicine. There are also ex-dressers, compounders, and vaccinators, with many of the followers of the indigenous systems of medicine, of a greater or less degree of ignorance from the surgical point of view; nevertheless, the above statistics, and the deductions from them are sufficiently near the truth for my present purpose. The difficulty may, however, be looked at from another point of view, thus for example if each of the dispensaries were at the centre of an equally accessible district, the most remote of the inhabitants would still be over 10½ miles from a medical man. In the native State of Jeypore the utmost we could do with the available funds was to try to place each individual within 15 miles of such assistance; in Jodhpore the radius was 28 miles; in Jaisulmer there was only one hospital in the state, namely, at the capital, the area being 16,000 square miles.

If we reflect upon figures such as these, I think that we must admit that it is necessary to supplement the regular channels of medical aid, and that this can only be effected by giving such a moderate amount of training as can be acquired with ease and safety by persons of ordinary intelligence, as for example, the headmen of the villages of the vast agricultural population of India. This training must, of course, be of the most practical kind.

Dental Diseases in the Navy.—This was the title of an address by Norman G. Bennett.

Volunteer Brigade Medical Unit.—Brigade Surgeon P. B. Giles read a paper outlining his views as to the personnel of a brigade medical unit. Its duties and functions were about as follows: Duties: First, as the brigade medical unit is formed to place the second and third lines of medical assistance in the field under one command it is obvious that it will have to perform all the duties of a brigade bearer company and field hospital. Secondly, as the increase of establishment provides for one to be detailed to each squad of the various regimental stretcher sections during action they can be employed to teach first aid, bandaging, etc., and so help the regimental medical officer. Also, they should be detailed to supervise the removal of the regimental daily sick to the field hospital. Thirdly, the duties of ward orderlies and other hospital requirements. Fourthly, sanitation being, perhaps, the most important factor for the good health of booths in camp, non-commissioned officers and men should be detailed daily to supervise under the orders of the sanitary medical officer the general sanitary state of the camp, and see that the pioneers do their work efficiently and not in a perfunctory manner. Practically so much value does he place upon this supervision for the general health that he has for years carried

it out with the greatest benefit, and this coming winter course at the Volunteer Ambulance School of Instruction he has devoted a lecture on camp sanitation for the advanced class which consists of men who have obtained A.F.E. 596.

Section on Pathology.

Immunity.—A full discussion on this topic was taken up by Drs. James Ritchie, William Bulloch, George Dreyer, Thorvald Madsen, C. J. Martin, H. Noguchi, M. A. Ruffer, A. E. Wright, and others. The chairman of the section, James Ritchie, opened the discussion, saying that at the present time the theories of Ehrlich, promulgated six years ago, still dominated the entire field. At present three points need to be carefully investigated. These were: (1) The natural immunity observed under certain circumstances to exist toward disease; (2) the artificially acquired immunity which came about in disease contracted under what may be called natural conditions of infection; and (3) the relation of these conditions to recovery in any case of infectious disease. It may be said that at present the direct attack on these problems has been largely overshadowed by the investigation of points which indirectly bear upon them, and especially by the urgent practical necessities which have arisen in consequence of demands made from the therapeutic side of medicine. It thus comes about that our reasonings chiefly are concerned with high degrees of immunity such as do not occur in nature and with artificial diseases whose phenomena elucidate matters under discussion. But how far, for instance, the knowledge accumulated regarding the mode of action of diphtheria antitoxin throws light on the recovery from an untreated attack of the disease, which may of course take place, is still an open question. He first asked what solid basis of fact have been arrived at regarding the process of immunization. In answer, he said, it is known that certain of the effects of some bacteria and most of the effects of other bacteria can be traced to poisons extremely soluble in simple saline solutions; that these poisons are of unknown composition; that they frequently have a selective action on special tissues; that when injected into the body of a susceptible animal they rapidly disappear from the circulating fluids of the body, probably in consequence of being fixed in susceptible cells; that they sometimes, as in the case of tetanus toxin, travel to the sensitive cells by special paths; that by immunization procedures an almost limitless degree of immunity can be developed in a sensitive animal; that such high degrees of immunity are associated with the appearance in the serum of an immune animal of substances capable of neutralizing these toxins; that the action of an antitoxin is specific—that is, it only neutralizes the toxin which stimulated its genesis; that the neutralization of toxin by antitoxin is of the nature of a chemical union; that in its union with antitoxin and also in its union with a susceptible cell, affinities in the toxin cell are saturated, which differ from the affinities to which the essentially toxic action is due. This last deduction is, however, only made from the fact that immunity can be produced by toxins so altered as to have partially or entirely lost their toxic action. To this may be added as an almost certain fact that the union of toxin and antitoxin is dissociable, and that the therapeutic effects of antitoxin, when acting in such a way as to detach toxin from cells to which it is fixed, is dependent on disassociation phenomena. Finally, it may be said, especially from what is known regarding tetanus toxin, that probably the eloboration of toxins may in some way favor the growth of the bacteria producing them, and this may explain why the neutralization of these toxins apparently converts a dangerous organism like the diphtheria bacillus into a relatively harmless saprophyte.

Toxins Specific.—It is to be recognized that the elaboration of soluble toxins is a quality of only certain bacteria, and that in the case of most bacteria, to put the fact in its most intelligible form, not merely the neutralization of poisons produced is necessary if the animal body is to escape destruction but the bacteria themselves must be actually killed. The killing of bacteria is associated with the presence in the serum of an immune animal of two substances, one thermolabile (complement) which naturally occurs in the serum of the animal species involved, and the other, thermostable (immune body), which either is present in normal serum in very small amount, or is altogether absent; that the degree of immunization which can be produced is much smaller than is the case with immunization against toxins; and that this is due to the fact that while an immune body can be formed in large quantity the act of immunization has much less effect on the production of complement. There is the further fact that we are only certain of the specificity of the immune body—that is, we know that immune body will only act deleteriously on the protoplasm which stimulated its genesis. A similar statement regarding complement cannot be made. It is practically certain that the reactions of these two substances on one another, and on the bacteria to be destroyed, are of a chemical nature analogous to the action of toxin on antitoxin, and also that the thermolabile substance has a chemical constitution closely allied to the constitution of toxin. While such results as those of Walker point strongly to the leucocytes being the source of complement, a review of the evidence adduced in favor of a coincident and correlated cytolysis occurring in every case where extracellular destruction of bacteria takes place during life is extremely unsatisfactory.

Toxins and Infections.—The knowledge with regard to the bacteria which by their presence give rise to infections differs in a very important detail from the knowledge of the bacteria acting by means of soluble toxins. In the case of the latter it is certain that it is the presence of the toxin in an animal's body which stimulates the production of antitoxin. In the case of the infective bacteria, on the other hand, it is not known what it is in the bacterial protoplasm which stimulates the production of substances, that is, immune body and complement, capable of killing that protoplasm. This is a point which merits attention here. The infective bacteria manifest their actions in the body by the production of inflammation and of fever. For the concept of fever, he thought it would be well if pathologists substituted the idea of a disturbance of metabolism of which fever may be one of the leading features. Though in the more recent treatments of the subject, such as those of Lazarus-Barlow and Ainley Walker, the metabolic aspects of fever are kept well in view, still in the minds of many the aspect of fever which leads to the explanation of the disturbances of heat regulation has rather a preponderant place attached to it. There is a tendency to look on fever too much in relation to normal heat regulation in the body, and as the other similar pathological processes to leave out of account possible pathological changes in function.

It is practically recognized by all that an increased burning up of the bodily tissues takes place, and it is this increased metabolism with its causes that from the pathological standpoint is really the important question, and it is probably from the consideration of this question in relation to infection that light may come on the true significance of fever as a whole. What the factors in the altered metabolism in fever are cannot be told, but just as in the group of effects which are called inflammation there are those which are the expression of injury done to tissues and those in which we have to recognize the activity of probably unaltered cells, so in fever it will be well to keep a mind open for the possibility that part of the increased metabolism may be the expression of work done by cells actively engaged in operating on the invading bacteria.

The fact that in broad outline the general effects produced in the body by different bacterial infections are similar might be explained in a variety of ways. The important fact is, that the poisonous substances present in infective bacteria do not diffuse out into an ordinary watery medium in which the bacteria may be present. Among the infective bacteria it is generally true that only from old cultures or from younger cultures which have been salted with ammonium sulphate can any poisons be obtained by filtration through porcelain. The most probable source of the poisons is the breaking up of the bacterial protoplasm which apparently frequently, both in cultures and in the living animals, follows on death. This is indicated by the observation of Pfeiffer. The poisons concerned are the so-called intracellular toxins, and by means of them the non-specific effects of the infective bacteria are due. When it is asked what is the relation of these toxins to the rise of immunity against infection, we are in considerable difficulty. And here again the early observations of Pfeiffer working with the cholera vibrio are of great importance, for this observer found that by appropriate dosage an immune animal might exhibit the capacity of killing all the bacteria injected into it and yet succumb to the effects of toxins which the death of the bacteria liberated from the bacterial protoplasm; in fact, might show earlier and greater symptoms of poisoning than the control unimmunized animal. Similar results have been more recently obtained by Kolle working with the plague bacillus, which probably has a somewhat different mode of exhibiting its pathogenic action.

Toxins and Antitoxins.—What is their chemical relationship? This is a pressing question. After reverting to a brief discussion regarding the historical aspects of the subject, he said that notwithstanding the different view points of Ehrlich, Sachs and Morgenroth on the one hand, and those of Madsen and Arrhenius on the other, the principles remain the same and the complexity of the processes have thus far defied analysis. The methods of physical chemistry were coming to the front, however, and he referred to the recent interesting results of Römer and Behring's laboratory, to the effect that when an electric current is passed through tetanus toxin in a U-tube and the moieties of toxin pipetted off from the kathode and anode poles, the examination of the moiety from the former shows that a rise in virulence has taken place. This is a very remarkable result, and if confirmed opens up a most important series of questions.

(To be Continued.)

BOOK REVIEW.

The Ophthalmic Year-Book. A digest of the Literature of Ophthalmology, with Index of Publications for the year 1903. By Edward Jackson, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic; President of the American Academy of Ophthalmology and Oto-Laryngology; Ophthalmologist to the Denver County Hospital, etc. The Herrick Book and Stationery Co., Denver.

This bids fair to be a welcome accession to the literature of ophthalmology. In 1872 Nagel began the publication of his well-known Jahresbericht, which has been an indispensable aid to all who would press their acquaintance with the ever-growing mass of printed matter beyond a cursory glance at the journals or books at hand.

When Nagel's Jahresbericht appeared, the original articles relating to the eye had reached annually the number of 600. Dr. Jackson states in his preface that the literature bearing on Ophthalmology is now growing by some 20,000 or 30,000 pages each year. From this comparison it may be seen how much greater the task now is, and how impossible it would be to make a modern Year-Book of Ophthalmology in any sense complete or satisfactory to all classes of readers. As an aid to research, it would be necessary to furnish at least the titles of all articles published, and abstracts of very many that would be of interest to comparatively few readers.

Nagel's Jahresbericht was the work of 20 collaborators, men whose names were among the best known of the time; while the modest volume under consideration is the result of the industry and critical acumen of one man. It is admirable as far as it goes, and fulfils the promises of the announcement—to provide a critical digest of the most important literature of the past year, judging it from the standpoint of the ophthalmic surgeon, and to furnish a list of the most important original communications appearing during the year.

The value of a work like this, the author states, depends, largely, upon its exclusion of all but the most appropriate matter. It is to be hoped that the scope of the work will enlarge from year to year, so that the principle of exclusion will be less prominent, for it is probable that only in this way can a year-book become of lasting value as a book of reference, or anything beyond the too familiar publishers' pot boilers and cumberers of the shelves.

The appearance of the book is excellent, and the few illustrations are satisfactory reproductions of the originals. The index by titles and authors' names is admirable.

BOOKS RECEIVED.

Serums, Vaccines and Toxines. By Dr. Wm. Cecil Bosanquet. 12mo, 344 pages. W. T. Keener & Co., Chicago.

Electrodiagnosis and Electrotherapeutics. By Dr. Toby Cohn. Translated by Dr. F. A. Scratchley. 12mo, 280 pages. Funk & Wagnalls Co., New York and London.

Contributions from the Wm. Pepper Laboratory of Clinical Medicine. Number 4. Alfred Stengel, Director. 8vo, 200 pages. Illustrated. University of Pennsylvania.

Theory and Practice of Infant Feeding, with Notes on Development. By Dr. Henry Dwight Chapin. Second edition. 8vo, 342 pages. Illustrated. Wm. Wood & Co., New York.

THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

THE INCIDENCE OF GASTRIC ULCER IN AMERICA.[1]

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A MOST casual observer from a general hospital of the north is at once struck by the comparative rarity of gastric ulcer in the medical wards of a more southern institution.

After making the above observation, Dr. Osler suggested that I should look up the statistics. While employed in this task, an invitation came from the Gastro-Enterological Society, and I straightway set about procuring comparative figures. Statistics on any subject are notoriously misleading and can be so juggled as to prove almost any general statement.

In the case of gastric ulcer most writers claim that the only certain way to get the incidence is to search the autopsy records. But do these give one a fair conception? I quite concur with Byron Bramwell,who points out the following fallacies and objections to the post mortem method. (1) All open ulcers are not found; (2) cicatrices of former ulcers are often missed; (3) superficial ulcers probably do not leave a cicatrix when they have healed; (4) some of the scars found may be due to other causes than ulcer, as syphilis, tubercle, etc.

If autopsy records alone are not a fair criterion of the incidence of ulcus ventriculi, let us turn our attention to the clinical data. These prove still more unsatisfactory. In many hospitals almost any case with a history of epigastric pain and vomiting, and the presence of hyperchlorhydria on gastric analysis, is regarded as one of ulcer of the stomach. Every month some cases are admitted to the Johns Hopkins Hospital with the above diagnosis, but a careful investigation of the history and clinical data enable one to unhesitatingly say that the condition is a gastric neurosis, probably a hyperchlorhydria. Some may even give a history suggesting hematemesis. Patients' statements as to hemorrhage are always to be taken *sub judice*. There is nothing more difficult, even for the skilled clinician, to distinguish blood from various other substances in the vomitus. How much more so for the untrained observation of the laity! The physician at times is required to make the most careful microscopical and chemical examinations before his suspicions, aroused by inspection of the vomitus, are confirmed or refuted. That gastric ulcer has sometimes to be diagnosed from the history supplied by the patient, is perfectly true. Yet several factors should be taken into consideration, as the education and intelligence of the patient, his ability to describe things accurately, the extent, frequency and the recentness of the supposed hemorrhage, the character of the medicines used, etc.

At some clinics they go to the other extreme and set a too rigid standard, which may account to some extent for the small number of cases diagnosed in the wards of the Johns Hopkins Hospital.

In spite of all these objections, I feel that by collecting conservative *clinical* diagnoses in addition to the pathological, we can arrive at a much fairer idea of the frequency of ulcer than by pathological data alone.

For this reason I have endeavored to obtain clinical, as well as pathological, data from some of the leading medical centers on this continent. For many years it has been known that the frequency of ulcer in European countries is very variable, and while common as a rule, it is rare in Russia, the Rhine Valley and the Bavarian Tyrol. Various reasons have been assigned for this—climatic, dietary, etc. It is not within the province of this paper to discuss this point.

Many American writers have commented upon the rarity of the disease on this continent. Da Costa in 1881 in his "Text-book of Medical Diagnosis" pointed this out, but gave no figures in support. Keating in the same year found that out of 444,564 deaths in New York City from the year 1868 to 1882, only 410 were assigned to gastric ulcer, or about 0.09 per cent.

Welch coincides with this view, and, in his oft-quoted article in Pepper's System of Medicine, states that he found in 800 autopsies at the Bellevue Hospital, New York, six cases of open ulcer, or 0.75 per cent., whereas the average in Europe is at the most conservative estimate 5 per cent. Thanks to the cooperation of many physicians, I have been able to procure from fifteen hospitals in nine cities situated at the four points of the compass, either clinical or pathological statistics, and from the majority both.

Clinical Statistics.—Let us first consider the frequency of gastric ulcer in America from the clinical standpoint. Out of 16,599 admissions to the medical service of fifteen hospitals situated in eight cities, there have been 930 cases diagnosed as gastric ulcer, or 0.57 per cent.

In Breslau and Zurich between the years 1853-1873 Lebert found 252 cases out of a total number of 41,688 medical admissions, or 0.66 per cent., *i.e.*, 0.99 per cent. higher than the Amercian.

In 42,219 patients admitted to the medical wards of the Charité Hospital, Berlin, between 1888-1898 there were 555 cases of gastric ulcer, or 1.33 per cent., *i.e.*, 0.76 per cent. higher than ours.

[1] Read at the Seventh Annual Meeting of the American Gastro-Enterological Association, Atlantic City, June 6, 1904.

Fenwick, from the London Hospital and from the London and Temperance Hospital, found of 45,712 cases admitted to the medical wards in ten years, there were 383 of ulcer or 0.82 per cent., and in the out-patient department in 5,000 consecutive cases 37 cases, or 0.74 per cent, which gives for hospital and outdoor patients in London 0.78 per cent., *i.e.*, 0.21 per cent. higher than the American.

Byron Bramwell in a clinical lecture in February, 1901, gives the following interesting figures for Edinburgh: Out of 35,692 cases admitted to the medical wards of the Edinburgh Royal Infirmary during eight years there were 803 of gastric ulcer, or 2.2 per cent. And among 7,665 out patients at the above institution, there were 76 or 0.09 per cent. This gives a percentage for Edinburgh in both out and indoor patients of 2.02, or 1.24 per cent. higher than in London and 1.45 per cent. higher than in America.

CLINICAL PERCENTAGE ACCORDING TO HOSPITALS.

Hospital.	Medical Admission.	No. of Ulcer Adm.	Per Cent.
Massachusetts General (Boston)	20,096	351	1.74
Royal Victoria (Montreal)	9,500	92	0.97
Montreal General (Mootreal)	10,966	97	0.88
Presbyterian (New York)	4,537	39	0.86
Boston City (Boston)	13,410	81	0.60
University of Pennsylvania (Philadelphia)	3,979	19	0.48
St. Luke's (New York)	6,153	29	0.47
Roosevelt (New York)	4,765	22	0.46
Johns Hopkins (Baltimore)	16,533	70	0.42
Lake Side (Cleveland)	3,427	13	0 38
New York (New York)	16,235	48	0.29
Cook County (Chicago)1	3,930	6	0.15
Pennsylvania (Philadelphia)	39,730	53	0.13
St. Joseph's (Baltimore)	3,298	4	0.12
Araphoe County (Denver)1	5,040	6	0.12
Total	161,599	930	0.57

If we look at the individual clinical returns from the various American cities, we find that those of the Massachusetts General Hospital (Boston) easily head the list in order of frequency.

PERCENTAGE ACCORDING TO CITIES.

City.	No. Medical Admissions.	No. Gastric Ulcers.	Per Cent.
Boston	33,506	432	1.28
Montreal	20,466	189	0.92
New York	31,690	138	0.44
Cleveland	3 427	13	0.38
Baltimore	19,831	74	0 37
Philadelphia	43,709	72	0.16
Chicago	3,930	6	0 15
Denver	5,040	6	0.12
Total	161,599	930	0 57

Breslau and Zurich	0.66 per cent.
London	0.78 per cent.
Berlin	1.33 per cent.
Edinburgh	2 02 per cent.

Greenough and Joslin,[4] in their excellent paper in 1898, report the figures for ten years, which, with the data for the subsequent four years, supplied me by Dr. Jos. Pratt, of Boston, make a grand total of 20,096 medical admissions, 351 cases of ulcer of the stomach and a percentage of 1.74.

The Boston City Hospital returns I procured for a period of four years from the Annual Reports, and found that of 13,410 medical admissions there were 81 cases, which gives a percentage of only 0.6. This large drop from the above is largely to be accounted for by the fact that many of their admissions are infections.

In spite of this, the percentage for Boston from its two leading hospitals is 1.28, which is 0.62 per cent. higher than the Zurich and Breslau, and even 0.5 per cent. than that of London.

Next to the Massachusetts General Hospital come the returns from the Royal Victoria Hospital (Montreal) with 92 cases out of 9,500 medical admissions, or 0.97 per cent. The General Hospital (Montreal) is a close third with 97 cases in 10,966 medical admissions, or a percentage of 0.88. This gives Montreal a frequency of 0.93 per cent., which is also higher than the German by 0.27 per cent., and the English by 0.15 per cent.*

The returns from three of the New York Hospitals were obtained from their annual reports, and those from the New York Hospital were supplied by Dr. Peabody and his assistant, Dr. Foster. Inspection of these shows the Presbyterian Hospital to be in the lead with 0.86 per cent. (39 ulcers in 4,537 admissions). Those from St. Luke's and Roosevelt hospitals were respectively 0.47 per cent. and 0.46 per cent., while the New York Hospital was still lower with 0.29 per cent., or 48 out of 16,235. Thus for New York the mean is 0.52 per cent., a considerable drop below the figures of Boston, Montreal, London and the Continent.

The Lakeside Hospital (Cleveland) has a percentage of 0.38 or 13 out of 3,427 medical admissions, and is thus fourth on the list of cities.

The figures from Philadelphia are rather puzzling. The University Hospital returns, kindly furnished me by Dr. James Tyson, give 19 cases out of 3,979 admissions, or 0.48 per cent. On the other hand, the Pennsylvania has a very much smaller percentage, viz., 0.13. This discrepancy cannot be accounted for by any apparent reason. Thus for Philadelphia there is a percentage of 0.16, which places it in sixth place.

In Baltimore we meet with similarly anomalous figures. At the Johns Hopkins there have been only 70 cases of gastric ulcer out of 16,553 medical admissions for a period of about fifteen years. This gives a percentage of 0.42, which is far below New York, yet higher than Philadelphia. But in striking contrast are the figures from St. Joseph's Hospital. The medical resident, Dr. Fisher, kindly looked up their records and found only four cases out of 3,298 medical admissions, or only 0.12 per cent. This then gives for Baltimore a percentage of 0.37, very far below

*Since going to print, Dr. Thacher has kindly forwarded me the figures from the Presbyterian Hospital for seven years. Among 10,041 medical admissions there have been 87 cases of gastric ulcer or 0.86 per cent. Among 1,020 autopsies there were 18 cases of gastric ulcer or 1.77 per cent. The latter have come too late to incorporate with the pathological statistics.

New York, and still further below Montreal and Boston.

Figures from Cook County Hospital, Chicago, and the Araphoe County (Denver), are quoted by Greenough and Joslin, and are still lower, being respectively 0.15 per cent. and 0.12 per cent. Exclusive of these two latter figures, it will be noticed that gastric ulcer is very much more prevalent in the North and becomes much less so in the South. On the other hand, judging from the small figures at our disposal, ulcer, clinically, at least, is very uncommon in the Middle West.

PATHOLOGICAL.
(Percentage According to Hospital.)

Hospital.	No. Autopsies.	No. Ulcers.	Per Cent.
Mass. General (Boston)	1 000	29	2.9
Lane Hospital (San Francisco)	551	13	2.35
New York (New York)	561	8	1.43
Boston City (Boston)	2,089	28	1.34
Pennsylvania (Philadelphia)	547	7	1.28
Montreal General (Montreal)	2,286	27	1 18
University (Philadelphia)	279	3	1.07
Lakeside (Cleveland)	413	4	0 92
Johns Hopkins (Baltimore)	2,223	19	0.85
Royal Victoria (Montreal)	872	6	0 69
Total	10,841	144	1.32

Autopsy Statistics.—Of these I have only figures from ten hospitals situated in seven different cities. Among 10,841 autopsies there were 144 open ulcers or their scar, which is an average of 1.32 per cent. Welch collected from the Continent 32,052 autopsies among which he found 1,522 cases or 5 per cent. In London, Fenwick has collected 47,912 autopsy records which yielded 2,019 or 4.2 per cent. Hence it will be seen that in the dead-house, ulcer is about 3½ times more common in England and 6½ times more common in Germany than in America. If we analyze the pathological returns in greater detail, we find that (excluding the figures from St. Joseph's Hospital, Baltimore, where the figure 1 in 66 is too small to be of any value) the Massachusetts General Hospital's returns show the highest percentage, viz., 2.9 per cent., or 29 cases in 1,000 autopsies. Next comes the Lane Hospital, San Francisco, with 13 cases out of 551 autopsies or 2.35 per cent. Third on the list is the New York city, with 8 cases in 561 autopsies, or 1.43 per cent.

AUTOPSY STATISTICS.
(Percentage According to Cities.)

City.	No. Autopsies.	No. Gastric Ulcers.	Per Cent.
San Francisco	551	13	2.35
Boston	3,089	57	1.84
New York	561	8	1.42
Philadelphia	826	10	1.21
Montreal	3,158	33	1.04
Cleveland	433	4	0.92
Baltimore	2,223	19	0 85
Total	10,841	144	1.32

London . . . . . 4.6 per cent.
Europe . . . . . 8.54 per cent.

Arranging the pathological data according to cities, we find San Francisco, which is second as regards clinical returns, is here easily first with 2.35 per cent. Boston next with 1.86 per cent. New York third with 1.42 per cent., as shown by the New York Hospital, the only New York Hospital from which I was able to procure pathological data. This latter is a much higher figure than quoted by Welch from the Bellevue, which was 0.75 per cent., or 6 in 800. Philadelphia is fourth with an average of 1.21 per cent., or 10 cases among 826 autopsies. The average for the two Montreal hospitals is 1.04 per cent., or 33 in 3,158. Cleveland, as represented by Lakeside, shows a considerable drop, having only 0.92 per cent. Lastly comes Baltimore, where, if we exclude the St. Joseph's figures, we have only 19 in 2,223 autopsies, or 0.85 per cent.

Hence it will be seen that the pathological data prove ulcer of the stomach to be very much more common in England and on the Continent than in America; that in the Northern cities, Boston, New York and Montreal, ulcer is more common than in the more Southern cities, Philadelphia and Baltimore. San Francisco, the most southern of the cities of my list being the exception to the rule.

To summarize our conclusions:

1. Both clinically and pathologically ulcer is less frequent in America than in London and on the Continent.

2. That both clinically and pathologically ulcer is more common in the northeastern than in the more southern regions of America, with the exception of San Francisco.

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THE CONDITION OF THE BLOOD AND URINE IN GASTRIC ULCER.[1]

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I. THE BLOOD IN GASTRIC ULCER.

The blood in gastric ulcer undergoes very material changes in a certain percentage of cases. These alterations are in large part dependent upon the accompanying hemorrhage. Anemia of more or less marked grade is usually present. As a rule it is of a secondary or chlorotic type.

Before proceeding to the blood changes that are undoubtedly referable to the gastric ulcer, it may not be out of place to say a few words here in regard to the association between the occurrence of gastric ulcer and a pre-existing anemic condition. Samuel and W. S. Fen-

[1] Read before the Seventh Annual Meeting of the American Gastro-enterological Association, at Atlantic City, June 6, 1904.

wick[1] say that there appears to be an intimate connection between anemia and gastric ulcer. In 72 per cent. of their series of gastric ulcer cases in young women there was a definite history of pallor and breathlessness before the first symptoms of the disease manifested themselves. They state that in a large proportion of the others it was highly probable that the patient had suffered from chlorosis shortly before the occurrence of the hematemesis or perforation. They further found that of 100 cases of severe anemia in young women who applied for treatment at the London and Temperance Fever Hospitals four were definitely affected with ulcer of the stomach, and in seven others the symptoms were highly suggestive of the disease. Among a hundred other girls suffering from various complaints the gastric affection was only diagnosed in two instances.

In considering the blood alterations in gastric ulcer, I shall refer briefly to our experience in this connection at the Johns Hopkins Hospital. I am sorry that the blood condition has not been more carefully followed, but blood counts were made in a sufficient number of cases to give us a more or less accurate picture of the blood changes. In the fifteen years since the Johns Hopkins Hospital was first opened there have been 82 cases of gastric ulcer admitted to the institution. To be strictly accurate, there were only 77, the remaining five being cases of duodenal ulcer. In the figures* here given the duodenal have not been kept separate from the gastric ulcer cases, as it has been shown by Cabot and others that there is no apparent difference in the blood findings in the two.

The Red Blood Corpuscles.—The red cells were counted in 44 of our cases. The highest count was 6,780,000; the lowest 1,912,000; and the average of 67 counts in these 44 cases was 4,071,000 per c.mm. The highest count of 6,780,000 was in a patient who had been having considerable vomiting and who had also been on rectal feeding for some time. The polycythemia was probably due to a resulting concentration of the blood. The lowest count was in a patient who on two occasions was thought to be suffering from carcinoma of the stomach, but who was subsequently shown to have gastric ulcer. Where anemia occurred it was usually due to gastric hemorrhage. There were ten cases in which the red cells were below 3,000,000 per c.mm. and two in which they were between 3,000,000 and 3,500,000 per c.mm. The average red count in Cabot's 51 cases was 3,372,000 per c.mm. There were 17 in which the red cells were below 3,000,000 per c.mm.

Cabot says that there is no single disease, so far as he is aware, in which the red cells are apt to be so low, with the exception of pernicious anemia. The anemia he attributes to the hemorrhage, and says that it is uncommon to see marked anemia in gastric ulcer patients who have never had a hemorrhage. Greenough and Joslin[2] report blood counts in 43 of their series of 187 cases, and in only 24, or a little more than 50 per cent., was the red count below 4,000,000 per c.mm. Grawitz suggests that the ulcerative process itself, without any attendant hemorrhage, may cause an actual anemia. Oppenheimer has shown that the pallor in certain cases of gastric ulcer is only apparent, and suggests that it is due to contraction of the superficial capillaries resulting from reflex action on the vasoconstrictor nerves.

The White Blood Corpuscles.—The leucocytes were counted in 45 cases in our series. The highest count was 40,000 per c.mm.; the lowest 1,100 per c.mm.; and the average of 263 counts was 7,500 per c.mm. It was difficult to explain, the high count of 40,000 leucocytes in one case. It was not a leucocytosis of hemorrhage. The average shows that there is no material change in the number of white cells, and these findings are confirmed by Cabot and others. There were no differential counts made in any of our cases. In looking over Cabot's differential counts it is interesting to find that there appears to be a slight relative increase in the small mononuclears in several of the patients, apparently at the expense of the polymorphonuclears.

Practically all observers agree that there is a digestive leucocytosis in gastric ulcer. In cases that have been on exclusive rectal feeding it may reach 12,000 to 15,000 when a rich albuminous meal is given. In our series the digestion leucocytosis was tested in five cases. It was present in all, but the increase in white cells was never marked after the meal, the highest count reached being 10,500 per c.mm. Most authorities agree that the occurrence of a digestion leucocytosis is a point of considerable diagnostic value in cases where the diagnosis is in doubt between gastric ulcer and carcinoma. It does not occur in the latter except in rare instances. Our experience with digestion leucocytosis was too limited to draw conclusions from, but in the cases in which it was tried the increase was too slight to be of much value in a differential diagnosis.

The Hemoglobin.—Of our 82 cases, the hemoglobin was estimated in 44. The highest was 105 per cent.; the lowest 12 per cent; and the average of 62 separate determinations was 58 per cent. In Cabot's series of 51 cases 42, or 80 per cent., had a hemoglobin of less than 50 per cent. The average "color index" in 43 of Greenough and Joslin's cases was 0.67, the highest being 1.41 and the lowest 0.35. Our average color index was 0.72, being very close to that of the latter observers.

The blood picture in our series was that of a secondary or chlorotic anemia, as seen from the following average determinations of the red and white cells and of the hemoglobin: red cells,

* For the figures here given I am indebted to Dr. Campbell Howard, who had already made a complete analysis of our gastric ulcer series, including the blood changes, for a full report to be subsequently published.

4,071,000 per c.mm.; leucocytes, 7,500; hemoglobin 58 per cent.

Owing to the tendency to a supersecretion of a highly acid gastric juice it is generally held that the alkalinity of the blood is reduced.

2. THE URINE IN GASTRIC ULCER.

Certain alterations may occur in the urine. These are not striking nor constant, and may occasionally be accidental and due to some other cause.

Albumin and casts were present together in 14 of our cases; a trace of albumin alone in seven; in 55 the urine was negative so far as albumin and casts were concerned and in five there were no urine notes recorded. No quantitative determinations of the urine were made to ascertain whether the amount of any of the various urinary salts was altered.

Von Noorden finds that albumin is not infrequently present in gastric ulcer, particularly after the severe attacks of gastric pain. Dreschfeld[3] says that albumoses may be present.

Owing to the increased secretion of hydrochloric acid, the urine is often but slightly acid and may even become alkaline. This is especially the case when the stomach is dilated. If the dilatation be considerable, and the fermentation due to micro-organisms increased, the urine may contain an excess of the ethereal sulphates and of indican. Dreschfeld says that the chlorides are often diminished and the phosphates increased. The grade of diminution of the chlorides is dependent largely upon the amount of hyperacidity and the severity of the vomiting.

Acetone and diacetic acid may occur in the urine in gastric ulcer, just as it may in other gastric affections. Lorenz has reported five instances of diaceturia in gastric ulcer, and Dreschfeld three. In some cases the symptoms due to this acid intoxication may be severe. They are usually epigastric pain, persistent vomiting, headache and dizziness. In one of Dreschfeld's cases these symptoms were accompanied by attacks of syncope whenever the patient attempted the slightest exertion. There was a marked acetone odor to the breath and the urine showed both acetone and diacetic acid. Under the administration of citrate of potash by mouth and rectum the symptoms gradually disappeared. The cause of this intoxication has not been definitely explained in gastric ulcer cases. It has been suggested that it may be due to a too strict nitrogenous diet. I have not found any statement as to whether β oxybutyric acid has been found in any of these cases as well. The probabilities are that it is the antecedent of the acetone and diacetic acid, just as it is in the acid intoxication of diabetic coma.

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THE PATHOLOGICAL ANATOMY OF GASTRIC ULCER.[1]

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In taking up the study of the pathological anatomy of this condition it is first necessary for us to define and limit the field of our inquiry. Notwithstanding the question which still invests the etiology, the anatomical picture of "gastric ulcer," in the generally accepted meaning of the term, is distinct and altogether definite.

Nevertheless, to prevent confusion or the possibility of misunderstanding of what I have to say concerning the subject, it is perhaps best to state, in this introduction that I have excluded from this brief study all reference to the rare tuberculous and syphilitic gastric ulcers and to those which we recognize as of traumatic origin, such as are formed by the taking into the stomach of various bodies, as fish bones, pieces of stone or metal or other foreign substances which are mostly found in hysterical or otherwise mentally deranged subjects. Necessarily I have also eliminated those instances in which the ulceration is of escharotic origin, as from the accidental or intentional introduction into the stomach of certain chemical agents, as carbolic acid, various forms of arsenic, alkalies and the like.

Please do not misunderstand me that I mean to infer that true gastric ulcer never follows the traumata resulting from such circumstances, for I do think that in certain rare cases this type of ulceration does follow injury to the gastric mucosa, but only when associated with other conditions, perhaps constantly allied with those productive in the definite anatomical condition which we must as yet perhaps best designate as idiopathic gastric, or peptic ulcer.

For purely anatomical reasons only, I have also excluded in this paper the consideration of duodenal ulcers, though I think we all agree that they are very closely associated with the gastric lesion etiologically and clinically, as well as in their anatomical characteristics.

I find my field somewhat limited in the preparation of this paper in that my subject concerns only the pathological anatomy of gastric ulcer, and since we are to be favored with a paper by Dr. MacCallum dealing only with the etiology, I must refrain from any remarks touching on this, the most interesting and important side of the pathology of gastric ulcer.

As a matter of fact the pathological anatomy of gastric ulcer has been well understood for a very long time and even the older clinical works contain for the most part well-defined presentations of this side of the subject, with accurate descriptions of the lesions. Hence it is, that I must for the greater part but call to your mind facts with which you are all perfectly familiar, and with most of which you have been fully conversant since the days of your undergraduate medical study.

1 Read at the Gastro-enterological Society, Atlantic City, June 6, 1904.

Nevertheless it may be of some interest to you to consider the character of the disease as it is found in various sections of the country, since it is well recognized that even so constant a condition as that which we are discussing varies considerably in different countries, and even in the various parts of the same country. For this reason I shall confine my remarks chiefly to the anatomical aspects of peptic ulcer as we find it in the general hospital service of New York City, and since the greater part of my material is derived from Bellevue Hospital, and particularly from the Fourth Medical Service, with which I have been associated for the past eight years, my facts are chiefly culled from the statistics of this service.

Frequency.—I find in Flint's text-book, which in its day may certainly be considered as authoritative, the following very interesting statements as to the occurrence of gastric ulcer, "Brinton says that gastric ulcer is present in five per cent. of cases of death from all causes. In Prague, where a large number of cases was examined, gastric ulcer was in three to four per cent. In Berlin and Erlangen 4.5 per cent., in Jena 10 per cent., and in Copenhagen 13 per cent." Flint states in happy explanation of these very large percentages, that they were for the most part based on a comparatively small number of observed cases. I have been unable to substantiate these figures from the original articles, except as to Brinton's more moderate statements, but in the light of more modern statistics we cannot but look on them as excessive. It seems to me that statistics in New York may be taken as fairly characteristic of the general occurrence of the disease in the hospital classes, since so large a part of our hospital population, particularly of those presenting themselves at Bellevue, are of foreign extraction or birth.

In looking over my records I have been surprised to find instances of gastric ulcer much less frequent than I had supposed to be the case. Thus in 1,000 consecutive autopsies on adults but nine cases were found. Eight hundred and forty-three of these necropsies, I made personally and I can, therefore, vouch as to the thoroughness of the examination as well as to that of the remaining 157, which were performed by my associates, Drs. Welch and LeWald. These statistics include those in which cicatrization and healing had taken place, as well as those in which the process was still active. Of these nine cases but two had been diagnosticated, a fact which also caused me considerable surprise, for all these patients had been under the observation, in most cases the personal attention of some of the most careful clinicians of New York. One of the undiagnosed cases had been seen by most of the more eminent internists of both this country and Europe, and without a suspicion as to the real nature of the case which finally terminated fatally. In passing, permit me to say that thus far we have found the lesion present in every case coming to autopsy in which the condition had been diagnosticated. These facts led me to search further to try to ascertain if the percentage of diagnostible peptic ulcer was not by chance, smaller than would be the case had a larger number of instances been investigated. Thus taking from the records of the same service before I was connected with the hospital, I find that of 1,366 consecutive histories, gastric ulcer was present in but three instances, a percentage comparing very closely to that of the 1,000 autopsies reviewed in detail by me. A still smaller percentage was found when I consulted the records of the entire medical service of Bellevue for the period of from January 1, 1904, to May 1, 1904, during which time 6,205 new patients were admitted to the medical services of the hospital. In all this number diagnosis of gastric ulcer was made in but three instances. Perhaps you will permit me to state that nevertheless, the visiting staff of Bellevue includes several well-known gastro-enterologists.

Briefly from these observations we are forced to the conclusion that gastric ulcer is a rather infrequent disease, at least as it occurs in a general hospital service, it is quite possible that it is more frequent in well-to-do patients whose habits of life are more liberal. My personal clinical records seem to bear out this statement. It also seems probable that a considerable percentage of these cases, perhaps more than one-half, are not diagnostible clinically, at least by the present methods of the general internist.

Occurrence.—Gastric ulcer is not limited in its occurrence to man only but it is also found in the lower animals, quite frequently, I am informed by Dr. Blair, of the New York Zoological Society, in certain of the domesticated animals, particularly among the *Canidæ*. It is also seen occasionally in wild animals; thus Blair and I found it once, occurring in a Japanese bear in the course of 283 autopsies on wild animals dying in captivity. So far we have not found it present among the ruminants, either those in captivity or such instances as we have had occasion to study in the open.

It is generally conceded that in man the lesion is most frequently found in young women, a statement substantiated by my own statistics and by most of those which I have consulted.

As a rule the ulcers are single, but they are often multiple. Coplin citing a case in which 34 distinct ulcerations were present. Brinton states that two or more are present in one out of every five cases. As a common thing where multiple ulcerations are present the age of the lesions varies and a new ulcer is very apt to occur after the others have completely healed. As an example of this, a recent case of Dr. W. C. Lusk presented an ulceration which was diagnosed and operated upon before perforation was complete. The patient did well for some weeks after the operation but suddenly died with the symptoms of a gastric perforation terminating

with peritonitis, the course of the disease being so rapid that operation was out of the question. It was naturally supposed that the perforation had taken place in the old ulceration, since after a very thorough examination at the time of the operation no other points of ulceration were discovered. At the necropsy we found the original surgical scar which represented the primary ulcer, situated near the pylorus well healed and cicatrized, but a very recent ulceration of the most typical form was found far from the first point of disease and on the anterior surface near the fundus. It is interesting to note in this case that a long-standing salpingitis was present and that other infarctions existed in the organs of their usual distribution.

Location of Ulcer.—Numerous observations have been made as to the points in which gastric ulceration is most likely to be found. Brinton, Ewald, Einhorn and many others have furnished us with statistics on this head, and though minor differences are naturally present, still in a general sort of way they agree on the most important data. From these various figures I have selected the most frequent points of occurrence as follows: First the posterior surface, then the lesser curvature, near the pylorus. They are least common on the anterior wall and at the fundus but may occur at any place, even extending into the duodenum and involving the esophagus. My own personal cases conform more to the data furnished by Coplin and have been mostly found near the pylorus. As will be discussed further on in this paper, the point at which the ulcer is located is of much importance in the prognosis of the case, unfortunately it is usually impossible to determine this clinically, except perhaps in a limited number of instances unless the ulceration be located at or near the pylorus.

Shape.—Gastric ulcers of the type which we are discussing are fairly constant in form. The mucous perforation is almost invariably circular or oval and generally larger than the deepest point of the ulceration so that the general shape of the ulcer is that of a cone or funnel. Not infrequently they are markedly oval in cross section but the longer diameter of the oval bears no definite relation and may be found in any plane. As a general thing the axis of the conical ulceration is not perpendicular to the wall of the stomach but is slightly oblique. It is stated by some pathologists that the shape and location of the ulcer corresponds to the distribution of a definite small blood vessel, and though this has also been my finding in some cases it is still disputed by many observers, and is, after all, more properly considered under the pathogenesis than the pathological anatomy.

One frequently finds a type of ulcer which can hardly be correctly described as conical or funnel shaped, but which should be more accurately defined as "saucer-shaped." In this type the ulcer is usually more shallow and rarely extends deeper than down to the muscle coat. The diameter is proportionately large and the sides instead of being shelving are concave or rounded out. It is quite possible that the more common form may be transformed into the saucer-shape simply by distending the stomach. There is absolutely no ground for believing that the manner of formation differs in either case.

One also occasionally meets with ulcers, even recently formed ones, in which the walls are perpendicular and which look exactly as though they had been punched out by an old-fashioned wad cutter. This form is much more frequent in the chronic ulcers and probably, sometimes at least, is formed from the other more acute types. Where several ulcers have fused, as they are very apt to do, where they are closely approximated, the contour is naturally scalloped, contorted and where the ulcer has spread widely as they occasionally do the borders may even be serpiginous.

The edges of the ulcer in acute cases are generally smooth and sharply cut, giving the characteristic "punched out" appearance mentioned in most text-books. This is the case where the ulcer is seen in its early stages but when it has been of considerable standing the punched-out aspect is obliterated by the presence of irregular areas of cicatrization and masses of granulation tissue. In old ulcerations the typical conical type is also lost and for the same reasons, thus in old cases we not infrequently find the funnel-shape reversed and the ulcer to be undermined, there can be no doubt but that this alteration in shape takes place in ulcers originally of the typical form and that the late stage does not represent the original shape of the primary lesion.

It is important for us to realize that where the ulcerations perforate the walls of the stomach and into other viscera, for example into the tissue of the liver, the conical type of the necrosis is not preserved, but that it is present only in the walls of the stomach. In old cases, as might naturally be expected, induration with more or less elevation of the periphery of the ulcer takes place, again this is a secondary affair and ought not to be considered as associated with the acute primary condition.

Size.—The size of the ulceration varies from very minute, a few millimeters on the mucous surface, to large areas of ulceration perhaps involving, as in a recent case of mine, an area measuring 10 x 15 centimeters, or as "large as the palm of the hand," one author states. It is necessary for us to note, however, that in these excessively large ulcerations secondary infections, as by various gangrene-producing organisms, are usually present or the occlusion or extensive disease of some nutrient vessel of considerable size is demonstrable. Schmaus and Ewing cite a case in which an ulceration extending circularly about the stomach was present. It is probable in such cases that secondary infection from the gastric contents is largely responsible in most instances.

As a rule, the size of the acute ulcerations does not exceed that of a 25-cent piece, according to Einhorn, but in my experience the average ulcer is considerably smaller than the "5-cent piece," which Einhorn mentions as the usual minimum size. I think that all of you who are accustomed to study these ulcerations anatomically will concur with me in the statement that small ulcers are the rule, but the matter of size is of relatively little importance when we realize that the size presented varies much according as to whether the stomach is dilated or contracted at the time of measurement.

Again, I do not think that the size is of such vital import even in prognosis as to healing, and has very little bearing in relation to the serious nature of the case, that is, in all except the very large ulcerations. For instance, Murchison reports a case terminating with fatal hemorrhage, in which the ulceration was but a "pore-like perforation a few lines in diameter" but which nevertheless had opened a vessel of large caliber.

The depth to which the ulceration extends varies, but generally it penetrates at least through the mucosa and submucosa and down to the muscle coats, often, as you well know, it extends through these layers also down to the fibrosa and the peritoneum. Whether it proceeds to actual peritoneal perforation depends, we believe, on the size of the diseased area, and on the rapidity of the necrosis determining the extent to which secondary inflammatory thickening of the subjacent peritoneum can take place, this latter tending, of course, to the limitation of the process at this point. It seems most probable that the depth to which perforation takes place in the subacute or chronic ulcers is more dependent on the character of the secondary inflammation which follows and the nature of the infecting micro-organisms than on the primary lesion. As a rule in my experience the peritoneal infections have been of a more severe character where the perforation is sudden, than where the history extends over weeks or months. Of course there are many factors aside from the virulence of the secondary infecting organisms which enter into the consideration of this statement, but which are largely beyond the legitimate field of this paper.

Ulcer Floor.—The floor of the ulcer, whether it be made up of one of the walls of the stomach, or of some of the adjacent organs, is generally covered by more or less necrotic tissue and blood clot and in the case of old ulcers by granulation tissue, frequently of very low grade.

Microscopical Anatomy.—Microscopically, the chief characteristic of the acute ulcers is the almost complete lack of inflammatory manifestations. The gland tubules are cut sharply off and while the edges of both glands and stroma seem slightly macerated and there is often a slight deposit of fibrin, serum and of a few leucocytes, as a rule very little inflammatory reaction is present, that is in the acute cases and even where the disease is of some days' or weeks' standing we often find the walls of the ulcer devoid of marked inflammatory reaction; perhaps this fact partly accounts for the notoriously slow healing of these ulcerations and in these respects they resemble in a most striking manner the perforating ulcers found in the skin and elsewhere in various trophic disturbances of the nervous system. Often the borders of the ulceration are marked out by a thin zone of necrotic tissue, particularly where the ulcer has been of some days' or weeks' standing.

The necrotic material present in acute cases, in the center of the ulceration shows as a rule in addition to simple necrosis unmistakable evidences of digestion. Bacteria and molds are generally demonstrable.

In the chronic ulcers we find that inflammatory exudation takes place slowly, the result being the production of more or less induration of the periphery of the ulcer. The granulations so formed are generally indolent in character and are very prone to necrose or to eventuate in irregular instead of diffuse cicatrization. Cellular exudation and the production of fibroblasts is generally not very markedly evident, and this finding is borne out clinically by the well-known indolent manner with which these ulcers heal, even under the most favorable conditions of rest and the most approved methods of treatment.

Perforation.—This depends largely, as we have already intimated, on the extent of the ulceration, on the rapidity of the process and on the degree to which the formation of limiting inflammatory membranes takes place as well as on the location of the ulceration, whether it impinges against some other viscus or not. Perforation is thus less apt to take place when the diseased area is opposed against some other viscus, particularly some solid and highly vascular organ such as the liver. It is most apt to follow when only the walls of the stomach intervene between the ulceration and some cavity, thus ulcers situated on the anterior wall of the stomach, particularly those near the fundus, are most liable to early perforation and the causation of terminal peritonitis. In chronic or subacute ulcers perforation not infrequently takes place at a point not corresponding to the site of the ulceration, but pus and gastric contents may infiltrate from this point, dissecting apart the walls of the stomach and finally pointing perhaps at some widely distant place. Such an example recently came under my notice in which the single mucous ulceration was situated near the pylorus in the anterior wall of the stomach. It had penetrated down into the muscle coats of the stomach and between these it has dissected its way downward and backward, finally upward and to the left, eventually perforating the peritoneal coat of the stomach on the posterior surface near the fundus from which point the exudate extended up, finally infecting the left pleural sac, causing empyema.

Where the ulceration be not too rapid and the

opposed viscus becomes glued by peritoneal adhesions to the coat of the stomach, perforation may take place into it, perhaps with very little clinical disturbance, thus frequent instances, some of them unsuspected ante mortem, as seen in which perforations into the colon or small intestine are discovered. Perforation against the surfaces of the liver or pancreas may be accompanied by merely the formation of a thick sheet of fibrous tissue, but often by abscess formation in these organs. It is notable that where other viscera are thus involved, extension of the process, though perhaps very slow, is the rule, the pus gradually dissecting its way, to open in the most unexpected places, perhaps in the perinephritic tissues, in the region of the appendix and so on. In most cases where complete perforation takes place and a fistulous opening against or into some other organ is established, spontaneous healing is not apt to ensue. Perhaps it is not out of place to insert here the statement which has been corroborated by a good many observers, namely that perforation of a true anatomical gastric ulcer, whether into the peritoneum or against some other organ, is more apt to set up a fatal peritonitis or serious suppurative process than is the case where perforation takes place in duodenal ulcer. As has been pointed out, this is probably due to the more nearly sterile character of the material as it is usually found in the duodenum and probably to the greater facility with which limiting adhesions are formed in this region. Pyloric ulcers are for these same reasons also somewhat less apt to cause serious complications.

The possibility of ulceration into the walls of a vessel of considerable size must be considered in even very small ulcers in which case fatal hemorrhage may occur too rapidly for surgical intervention in even the most favorably situated hospital cases. Coplin states that 3.2 per cent. of the cases perforate into the peritoneal cavity, this is a somewhat larger percentage than most observers have noted.

It is unnecessary for us to consider here all the lesions which may arise from perforation since they depend almost entirely on the portion in which the perforation takes place, the direction in which the material infiltrates and on the nature of the secondary processes which arise as a consequence of the infection, with these you are all perfectly familiar, and I have perhaps sufficiently indicated the general conditions which determine the complications from the anatomical standpoint.

Healing.—There can be no doubt but that a large number of gastric ulcers of small extent occur and heal without producing symptoms sufficiently marked as to cause the patient to consult a physician. Thus where the ulceration does not extend deeper than into the submucosa and is so minute as to be little more than a simple anatomical erosion of the mucous membrane, granulations springing up from the highly vascular connective tissue of the gastric submucosa fill in the space, and subsequently contraction and cicatrization leaves the area marked by but a small point of retracted and adherent mucosa very frequently of a stellate form. In my opinion, it is very doubtful if glandular hyperplasia plays any rôle in such a healing process, I am inclined to think that many of the small white points and nodules of thickening which we commonly find in the mucous membrane of the stomach at post-mortem examination and which microscopically are made up of firm adult connective tissue, generally surrounded by a certain amount of cellular exudate, are really formed in this manner and that they represent minute healed gastric ulcers. I do not think, however, that we are justified, as some observers assert, in concluding that most or all scars of the mucous membrane represent old gastric ulcers, many of them are probably simple cicatrices formed after traumatic injuries of the gastric mucosa, perhaps even after simple mucous desquamation. From the study of the healing process in gastric ulcer I am convinced that where healing takes place, it is usually from granulations which spring from the base of the ulceration more than from the sides, though it is quite possible that those originating from the lateral aspects of the deeper perforations also enter into the reparative process, but from my observations to a much lesser degree. Perhaps this accounts for the marked tendency to infiltration and dissection along the sides of old gastric ulcers, while the floor is often rendered firm and practically impermeable by the formation of thick sheets of hyperplastic fibrous tissue.

From my cases I am inclined to think that in the larger ulcerations at least little is to be expected in the way of glandular hyperplasia and epithelial reproduction of the diseased mucosa over the ulcerated area, in some cases this does take place to a limited degree but the tubules so formed as they are generally found about the periphery of the old ulcerated area are atypical, their relation to the stroma is not normal and probably the deficient vascular supply prevents the possibility of complete normal restitution of so complex a structure. Thus it is that we generally find healed ulcerations marked by a firm base of connective tissue, sometimes partly covered in by an atypical epithelial layer, but rarely showing normal glandular structure.

In a good many cases, serious distortion of the stomach is produced by the contraction occurring in cicatrization of gastric ulcers, thus pyloric stenosis is occasionally seen, or even, if the ulcer be situated in a broader portion of the cavity, stellate scars of such extent as to seriously compromise the stomach may be found. Adhesions to the surrounding viscera may also be so extensive as to give rise to a good deal of disturbance.

Where an ulcer has been of long standing one commonly finds the mucous membrane surrounding the ulcer completely displaced for a consider-

able distance and represented by a layer of hyperplastic connective tissue infiltrated by leucocytes, plasma cells, lymphocytes and permeated by newly formed blood vessels and fibroblasts, glandular structures may be entirely wanting and yet gross examination may show but very little apparent alteration.

I do not wish to close this paper concerning the anatomical characteristics of gastric ulcer without placing myself among those who believe that primary gastric carcinoma frequently arises in the healing lesions. Two of my cases of gastric cancer show this distinctly, both in their clinical history and from the subsequent anatomical findings, and while many investigators have asserted this relationship others have disputed it. It seems to me, considering gastric cancer in its relationship to the formation of carcinoma elsewhere, that no more favorable circumstances for the excitement of an abnormal epithelial proliferation could exist than is found in the borders of an old gastric ulcer where gastric contents and secretion add their irritation to that of chronic inflammation and cicatricial formation.

COMPLICATIONS AND SEQUELÆ OF GASTRIC ULCER.[1]

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ACCORDING to their origin, the complications and sequelæ of gastric ulcer may be classified into two great groups:

(I) INTRAGASTRIC, (II) EXTRAGASTRIC.

I. Among the intragastric are:
1. Hemorrhage.
2. Profound anemia.
3. Interference with motility of the stomach (if the lesion extends deeply into the muscularis, being thus independent of such interference with motility which might arise from stenoses or perigastric adhesions).
4. Stenosis, of which we have: (*a*) Cardia, (*b*) Pylorus, (*c*) Body of stomach (hour-glass stomach).
5. Gastrosuccorrhea with its various complications, such as tetany, etc.
6. Carcinoma.

II. The extragastric include:
1. Perforation (*a*) free, (*b*) with adhesions, (*c*) with adhesions and suppuration (subphrenic and other abscesses, fistulæ of various kinds), (*d*) general emphysema.
2. Perigastritis (*a*) localized thickening of the serosa, (*b*) adhesions to various organs, (*c*) displacements of the stomach, (*d*) distortion of the stomach.

[1] Read at the Seventh Annual Meeting of the American Gastro-enterological Association, held at Atlantic City, New Jersey, June 6-7, 1904.

To enter into any extended discussion of these various complications and sequelæ is unfortunately impossible, since the time alloted is all too brief, and, furthermore, some of these topics will be considered by other speakers in this symposium. I believe, therefore, that I will best subserve the object of this symposium if I present some illustrative cases which have occurred at the Mount Sinai Hospital during the past few years.

For this purpose, with the aid of Dr. Edward A. Aaronson, I have studied the records of 216 cases of ulcer and cancer of the stomach which have been admitted to the medical and surgical services of Mount Sinai Hospital from 1898 to the present time.

Ulcer of the stomach	52
Carcinoma of the stomach	142
Benign pyloric stenosis	15
Perigastritis	7

In this series of 52 cases of gastric ulcer there were the following complications:

Hematemesis	10
Perforation	4
Perigastritis	2
Intestinal obstruction	1
Thrombosis of splenic vein, subphrenic abscess, gangrene of spleen, abscess of liver, and necrosis of lung	1

Sequelæ of gastric ulcer:

Carcinoma	4
Pyloric stenosis	6
Recurrence	2

It will thus be seen that this series only includes certain of the complications and sequelæ which may arise in this condition, but for reasons above stated I shall confine myself to these. Furthermore, in many cases the fragmentary character of the histories and the poverty of details as regards the chemism of the stomach contents, so desirable in the consideration of all cases of stomach disease, are due to the fact that many of these cases, when admitted to the hospital, were desperately ill. Nor will all the cases be considered, but only such as illustrate some special feature of interest.

I. HEMORRHAGE.

Of the ten cases of hemorrhage I shall refer to but one, since the loss of blood was so great and so uncontrollable by medical treatment that surgical interference was necessary.

Case I. Gastric Ulcer; Hematemesis; Profound Anemia; Gastrotomy; Cauterization of Gastric Ulcer, and Gastro-enterostomy; Death.[1]—Fannie S., eighteen years of age, was admitted July 25, 1901, to the medical division of the hospital under the care of Dr. H. Berg. Present illness began two weeks prior to admission with severe pains in the epigastrium, recurring every two or three hours, each paroxysm lasting about half an hour. Up to three days before admission there was no vomiting. Then she vomited a large quantity of bright red blood (according to her statement, about one quart). The bloody vomiting recurred the following day; stools tarry.

[1] Mt. Sinai Hospital Reports, Vol. III, p. 98.

On admission a blood count showed 3,500,000 red cells, 12,000 white cells and 50 per cent. hemoglobin. During her stay on the medical side of the hospital (six days) the patient at different periods vomited large quantities of blood. Her pulse became steadily more rapid and feeble and general condition progressively worse. The medical treatment being unsuccessful, operative interference was decided upon, and the patient was referred to Dr. A. Berg for operation.

The presence of the repeated hematemesis naturally rendered it impossible to present any report on the chemism of the stomach. When transferred the patient was exsanguinated; the pulse 156, soft and thready; hemoglobin 30 per cent. General anesthesia being inadmissible, the operation was done under eucaine anesthesia, and was performed at the express request of the attending physician.

Operation.—Incision, six inches long, downward from the ensiform cartilage. The peritoneal cavity being opened, the stomach was at once exposed. On handling the stomach patient complained of nausea. She then vomited several ounces of black blood and a large clot. Inspection of the anterior wall of the stomach and palpation showed no indications of an ulcer. Palpation of the posterior wall revealed an area of induration near the pylorus and close to the lesser curvature, which was about the size of a ten-cent piece. The stomach was delivered into the wound, and the peritoneum was walled off by iodoform-gauze packings. An incision, about four inches long, was made through the anterior wall of the stomach parallel to its long axis, one end being at the pylorus. Four silk fillets were passed, at each angle, through either margin of the incision, and its edges were separated by traction. A quantity of dark-colored blood was wiped out of the stomach. Digital exploration of the suspected area revealed an ulcer. Hemorrhage had ceased. By means of four broad retractors every part of the mucous surface of the stomach was successively exposed to view, demonstrating that no other ulcer was present. The floor and margins of the ulcer were seared with the actual cautery. A large vessel could be felt pulsating immediately underneath the floor of the ulcer. This circumstance forbade a deep cauterization.

The gastric incision was closed, in its pyloric portion, with a double row of continuous Lembert sutures. The other angle of the wound was utilized for the establishment of an anastomosis with a coil of the jejunum (Murphy button). Peritoneal toilet; closure of the abdomen.

Duration of the operation, one hour. During the entire operation the patient complained of air-hunger; the pulse flagged so rapidly that two saline infusions, of sixty ounces each, were administered.

The patient never rallied and died fourteen hours after the operation.

A fundamental rule of medicine is the checking of dangerous hemorrhage. There is no reason why a dangerous hemorrhage issuing from the stomach should form an exception to this rule. It seems that in this case more prompt interference might have checked the hemorrhage and eliminated the ulcer.

This is the only case in which hemorrhage required surgical interference, and was the only one of the ten which was fatal. This result is rare in so young a patient, since, as shown by Moulin,[1] death from hemorrhage in gastric ulcer in women under thirty years of age, occurred only once in 153 cases. In women over thirty years of age it occurred in six per cent. of the cases, while in men over thirty years old it was still more frequent, *i.e.*, in 12½ per cent. of the cases.

The indications for operative control of hemorrhage in gastric ulcer is by no means a subject on which all writers are agreed. It is, however, generally accepted that in a single large hemorrhage it should only be resorted to after all medical methods have failed to control it. That even as a last resort, much can be accomplished, is shown by the numerous successful cases reported in the English medical journals during the past few years. Leube would find an even greater indication in repeated small hemorrhages,—a class of cases in which experience has shown cancer, rather than ulcer, is more apt to be found.

2. PERFORATION.

Perforation presents a group of symptoms dependent entirely upon the mode of onset. This may either be acute and is then associated with the discharge of the stomach contents into the free peritoneal cavity, or it may be slower and preceded by the adhesion of portions of the gastric wall to one or more of the surrounding viscera. How varied the latter course may be is well known, and the results of this slow perforation constitute some of the most striking findings at the operation table and at autopsy. Thus, the perforation may be into any of the adjacent organs—liver, pancreas, spleen, transverse colon (fecal vomiting), portal vein (pylephlebitis); or, the course may be upward through the diaphragm and the perforation even into the pericardium or into the heart. The pleura and lung may be invaded and even costal cartilage may be attacked. Finally, fistulæ may reach the surface, thus giving rise to gastro-cutaneous fistulæ. In some of the various perforations into the neighboring organs, which are associated with suppuration, we have the different types of perigastric subphrenic abscess. Another complication of perforation, which is extremely rare, is general subcutaneous emphysema.

Among the cases of perforation the following may be referred to:

Case II. Ulcus Ventriculi; Perforation; General Peritonitis; Gastrorrhaphy; Death.—J. M., twenty-two years old, Russian, a waiter, was admitted February 9, 1903. He was absolutely

1 Lancet, 1902, Vol. II, p. 17.

well up to the time of his present illness, which was of sixteen hours' duration. It began suddenly with severe cramp-like pains around the umbilicus, soon followed by pain in the right iliac fossa. He vomited five times last night and twice this morning, the last time eight hours ago. The vomitus was brownish in color but contained no blood. At present he has considereable nausea. Bowels moved last two days ago.

Physical examination: General condition very poor, cyanotic, restless. Temperature 101° F., pulse 132. The abdomen was moderately distended and very rigid; some tenderness all over the abdomen which is very marked in the right iliac fossa; movable dulness in the flanks on change of position of the patient. No mass palpable.

Immediate operation by Dr. Moschcowitz. The appendix was first sought for and found normal. On opening the peritoneum there was a gush of two quarts of odorless purulent fluid. The intestines were closely examined for a perforation, but with a negative result. The abdominal incision was carried upward and on careful search a perforation on the anterior wall of the stomach, about the size of a pea, was found one inch from the pyloric groove. Gastrorrhaphy and peritoneal drainage concluded the operation. Culture from the peritoneal exudate showed *Staphylococcus aureus*.

The condition of the patient became worse and death occurred on the day following operation. No autopsy.

The latency of the pain is the most striking feature of the history, although possibly, had the patient's general condition permitted it, some symptom pointing to the gastric ulcer would have been elicited. To have made an accurate diagnosis of perforation of an ulcer was absolutely impossible before operation, but that there had been a perforation of some viscus with free fluid in the peritoneal cavity was very evident.

Case III. Ulcer of the Stomach; Perforation; General Peritonitis; Death.[1]—A. G., female, thirty-four years of age, was admitted to the hospital moribund. She had never been ill until four days before admission. Then she complained of adbominal cramps, specially marked in the right iliac region, nausea, vomiting and constipation. She was sent to the hospital for intestinal obstruction but no operation was deemed advisable, and she died soon after admission.

The autopsy revealed a clean-cut perforation of the stomach, about half a centimeter in diameter, located in the lesser curvature near the pylorus. Its edges were thickened and infiltrated. There were free gas and a large amount of brownish fluid in the peritoneal cavity. The spleen lay in a sac, made by adhesions, filled with fluid. Microscopical examination of the edge of the perforation showed that the infiltration was entirely inflammatory. The usual lesions found in cases of status lymphaticus were also present.

[1] Mt. Sinai Hospital Reports, Vol. I, p. 178.

The result in the next case of perforation was better, since the operation was successful in spite of the presence of a diffuse peritonitis.

Case IV. Perforation of Gastric Ulcer; Diffuse Peritonitis; Operation; Recovery.—R. L., eighteen years of age, Russian, tailoress, was admitted October 24, 1901. The history given is that for five years she has had frequent attacks of pain over the right side of the abdomen and in the epigastrium, radiating to the right shoulder. Has heartburn before these attacks, which come on after eating food. Vomiting immediately relieves the pain. No hematemesis; no melena. Present illness began three days ago, after six months' respite from the above attacks. She went to bed yesterday when she suddenly grew weak and faint, this being the first time that she had to go to bed. Pain for the first time began in the left shoulder and then in the abdomen where she had severe cramps. No vomiting; bowels constipated.

Physical examination showed a rigid abdomen, tympanitic, and marked tenderness over the epigastrium, left hypochondrium and right iliac fossa. Rectal examination was negative. At time of admission temperature was 103.4° F., pulse 120.

Operation was immediately performed by Dr. A. A. Berg. On opening the abdomen some clear fluid escaped. Palpation of the appendicular region by the finger gave negative results. In the epigastrium a number of adhesions were felt between the stomach, gall-bladder and liver. After the upper peritoneum was incised there followed a gush of gas and thin greenish-white fluid. On lifting up the left lobe of the liver a greenish fluid and gas bubbles were seen to exude from the stomach, and a perforation was found on the anterior wall in the cardiac portion near the greater curvature. The perforation was the size of a pea and about it the stomach was infiltrated. After repair of the perforation the wound was closed and a rapid improvement in the patient's condition followed.

October 29.—No vomiting for two days; condition very good; fluids by mouth.

November 4.—Temperature rose to 103.8° F. Complains of pain in the left shoulder. Some dulness over the right lung posteriorly. There was also an area of dulness posteriorly in the left hypochondrium.

November 5.—Aspiration in the left subphrenic space negative.

December 23.—After a fairly smooth course the patient was discharged cured, all symptoms having disappeared.

None of the cases of perforation of gastric ulcer occurred in patients who were under treatment for gastric ulcer in the hospital, but were admitted for perforative peritonitis, or, as in Case III, for intestinal obstruction. The histories obtained from these patients did not permit the making of a correct diagnosis.

The histories of Cases II and IV are quite typi-

cal of what occurs when the perforating ulcers are situated on the anterior wall, in which, as is well known, adhesions seldom occur. That an ulcer near the lesser curvature should act in this way is more exceptional, since the antecedent adhesions which generally form with these ulcers usually determine slow perforation with the formation of a subphrenic abscess. Case IV has added interest, since the adhesions which were found between the stomach, liver and gall-bladder, were associated with another ulcer, probably of longer standing, situated near the pylorus or on the lesser curvature. The perforating ulcer, which caused the urgent symptoms, was found on the anterior surface and had no protective adhesions.

One point may deserve reference, namely, the latency of the symptoms in many cases of perforation, even where extensive adhesions have formed about the stomach. Of the many instances of this kind which might be cited, none is more striking than the case reported by Ashhurst.[1] This woman, fifty-seven years old, had no complaints beyond some discomfort from what she called "wind on her stomach." Shortly before she was found dead in bed at night she had had some sharp pain, of which she complained but little. Two quarts of foul pus were discovered in her peritoneal cavity, and two perforations in the stomach, one on the posterior surface, the other high up near the lesser curvature and opening into a ruptured abscess cavity under the left lobe of the liver.

The possibilities of surgical treatment of perforation, even under the most adverse circumstances, are too well known to require any special discussion.

The next case presents a number of unique features and is as follows:

Case V. Perforated Gastric Ulcer; Subphrenic Abscess; Thrombosis of Upper Branch of Splenic Vein; Infarction and Gangrene of Spleen; Necrosis of Lung; Abscess of Liver; Sepsis; Death.[2]—S. F., female, thirty-three years old, was admitted June 23, 1898, to the service of Dr. Gerster. Had been under treatment for gastric ulcer. Seven weeks before admission she had sudden pain in the umbilical region and since then has had continuous fever, at first with, later without profuse sweats; no chills. Vomiting of intensely fetid fluid.

On the left side dulness extending from the lower border of the ribs to the sixth space posteriorly, apparently connected with a tumor mass in the left hypochondrium. Occasionally, after vomiting of fetid fluid, the dulness was replaced by tympanitic resonance with succussion.

June 24.—Aspiration in eighth left intercostal space, axillary line, withdrawing brown, decomposing pus, containing particles of food. Longitudinal incision along needle; seventh and eighth ribs resected; pleural cavity walled off by gauze packings; diaphragm incised, and a large cavity opened into, situated in retrogastric space, its upper anterior wall formed by a gangrenous part of spleen, its anterior wall formed by a posterior surface of stomach, and communicating by an opening through the diaphragm with an abscess cavity in the lung. The cavity was filled with fluid with peculiar methyl alcohol odor. The gangrenous portion of spleen was easily removed. At bottom of cavity was seen a large gastric fistula, which could not be repaired on account of the necrotic condition of the neighboring parts. Cavity evacuated and drained; fistula plugged.

Cultures from the gangrenous spleen showed pure cultures of the *Bacillus proteus vulgaris.*

June 25.—Profuse discharge of material from stomach and necrotic tissues of the wall of the cavity. Posture did not affect gastric discharge.

July 1.—Death from inanition and sepsis.

The post-mortem examination which was made by Dr. Libman, was restricted to the parts in the neigborhood of the wound revealed a very unique state of affairs. In the fundus of the stomach there was a fairly circular opening about six centimeters in diameter. The mucous membrane was everted and had firmly grown to the serous coat of the stomach. From the edge of the perforation ran a vein filled by a partially organized thrombus, which anastomosed with the splenic vein. The thrombus was continued into the upper branch of the splenic vein. The spleen was necrotic at its upper end and was ragged. A large piece of its upper pole was missing. About the middle of the spleen was a raised margin, above which the spleen was swollen and congested. This area, together with the piece missing, was taken to represent the area normally drained by the upper branch of the splenic vein. The diaphragm was perforated at the base of the left lung and there was a defect in the lung. The edges of the perforation of the diaphragm were adherent to the lung. The lung itself was normal, excepting the lower half of the lower lobe, which was in a state of chronic interstitial inflammation. There had evidently been gangrene of part of the lower lobe, and the gangrenous area had completely separated. In the left lobe of the liver, posteriorly, was a large cavity containing pus and having a ragged, necrotic wall infiltrated with pus. The vessels supplying the part could not be examined.

In the differential diagnosis of perforation I wish to report the following case of ulcer and hematesis with pseudoperforation, that is, the occurrence of symptoms which indicated perforation and yet operation showed neither perforation nor peritonitis, but only an ulcer on the lesser curvature.

Case VI. Gastric Ulcer; Hematemesis; Pseudoperforation; Laparotomy; Ulcer found on the Lesser Curvature; Gastro-enterostomy; Recovery.—S. V., female, twenty-seven years of age, native of the Danish West Indies, domestic, was admitted December 16, 1903, with the history that

[1] Amer. Jour. of the Med. Sciences, Oct., 1902, p. 629.
[2] Mt. Sinai Hospital Reports, Vol. I, p. 178.

she had had no gastric symptoms previous to two years ago, but for several years has had headache, dyspnea on exertion and cardiac palpitation. For the past two years she has been subject to attacks lasting a month or more, the first symptom of which was a sharp pain under the lower sternum and in the pit of the stomach. The pain radiated around the lower left chest to the back, was sharp in character, worse on motion of the body, coughing and on deep inspiration. Vomiting occurs at least once a day during these attacks and there has been hematemesis. The attacks are followed by intervals of relief lasting several months.

She has now had pain and vomiting for two weeks, and during this time has vomited blood three times, always about a mouthful. The time of vomiting bears no relation to eating or coughing. There is absolute anorexia and nausea during an attack. No pain in the right hypochondrium. Bowels regular; feces normal. Has been in bed since last hematemesis, five days ago.

Physical examination showed general condition good; fairly well nourished. Tongue moist and coated. No icterus. Small submaxillary glands; other glands negative. Percussion over the dorsal and lumbar spines causes pain. Lungs, heart, liver and spleen negative. In abdomen slight prominence in the upper part of the left rectus where there is some increased rigidity. Tenderness in the epigastrium extending down to the level of the umbilicus, more marked over the upper rectus and left hypochondrium, otherwise negative. Hemoglobin 78 per cent.; red cells 4,120,000; white cells 10,200.

December 19.—Vomited bile-stained fluid for the first time.

December 21.—Nutritive enemata since admission with no relief from gastric pain. Abdomen still tender and constant nausea with occasional bile-stained vomiting. No blood in the stool (guaiac test).

December 23.—After six days of rectal feeding acetone and diacetic acid appeared in the urine. Epigastric tenderness diminished. Pain is paroxysmal.

December 26.—No vomiting for the past two days, but is still tender.

December 28.—Barley water by mouth. Hemoglobin 78 per cent.; red cells 4,080,000.

December 29.—Marked epigastric tenderness; no nausea or vomiting. Increased pain.

January 2.—Vomited once last night and again this morning. This A.M. vomitus contained old blood. Rectal feeding has been continued for past seventeen days with only water by mouth. Very little epigastric tenderness.

January 7.—No tenderness or gastric symptoms.

January 13.—Vomited four times in past twenty-four hours; last vomitus contained ʒii of dark clotted blood. No rigidity of recti.

January 20.—No vomiting in five days. Slight tenderness in epigastrium.

January 23.—Vomitus to-day showed no free hydrochloric acid; no lactic acid.

January 29.—No vomiting in six days. Still has tenderness in epigastrium and hyperesthesia of skin on left side of the back. Vomited this afternoon. This evening has intense pain in the epigastrium. Temperature 102.2° F., pulse 112. No signs of shock. Tenderness most marked in the epigastrium and diminishing to a finger above the umbilicus. No increase of rigidity. Respirations are 30 and abdominal. Liver percusses to the free border; flanks tympanitic.

January 30.—3 A.M. Pulse 140; temperature 103° F. Increased rigidity in the epigastrium and Dr. A. A. Berg advised exploratory laparotomy. 7 A.M. Operation. An ulcer was found on the lesser curvature near the pylorus. There was neither a perforation nor any peritonitis. A gastro-enterostomy was performed.

March 5.—The subsequent course was uneventful. All the symptoms disappeared and she was discharged cured.

The urine was always negative, except for a trace of albumin and an occasional hyaline cast.

The reason for the absence of report of stomach analysis in this case is that the acuteness of the symptoms of gastric ulcer did not warrant the use of the tube.

The explanation of the acute symptoms is by no means easy, especially in view of the absence of perforation or peritonitis as revealed at the operation. The diagnosis of perforation seemed warranted by her condition before the operation. The exploratory operation seemed justified by the increasing severity of the symptoms and the happy outcome of the gastro-enterostomy demonstrated its usefulness.

Another case which shows the difficulty of the interpretation of attacks of pain occurring during the course of gastric ulcer, was the following in which operation revealed an intestinal obstruction, although the symptoms indicated perforation.

Case VII. Gastric Ulcer; Sudden Severe Pain; Symptoms of Perforation; Intestinal Obstruction; Death.—F. S., male, thirty-two years of age, brassworker, admitted December 7, 1903, transferred to surgical division December 9.

Previous history: For the past seven years there has been gastro-intestinal disturbance. Six years ago was in a hospital abroad suffering from abdominal pain and distention.

Present history: Duration indefinite. There has been a gradual increase in the severity of the gastric symptoms, *i.e.*, he has had pain in the whole abdomen, worse after eating and at night (Reichmann's disease). Occasional vomiting about an hour after eating; no hematemesis. Yesterday the vomitus contained black particles. Considerable loss of flesh and strength. Bowels very constipated. No tenderness. Urination normal. He felt very weak during the past month and has been in bed most of the time. Pressure exerted by lying on his abdomen relieves the pain.

Distention comes on about an hour after ingestion of food.

Physical examination: General condition good. Aphthous stomatitis present. No glandular enlargement. Lungs, heart, liver and spleen negative. Examination of stomach area shows a swelling in the upper abdomen extending to just below the umbilicus, showing slight peristaltic movement. Succession to level of umbilicus. Urine negative. Stomach contents were not obtainable as the patient objected to the use of the tube.

December 9.—Last night and this morning the patient had a severe attack of abdominal cramp-like pain referred to the umbilical region. No increase of the pulse rate nor rise of temperature. Abdomen held rigid; no tenderness. In the morning the patient was relieved by morphine. In the afternoon the pain continued; abdomen distended and general tympany; nothing palpable. Bowels did not move after high enema. Patient rapidly grew weaker, pulse more rapid, and perforation being suspected he was seen by Dr. Berg, who decided to operate at once.

Operation at 9 P.M., and by this time the condition was so poor that only local anesthesia could be employed. Pulse had risen to 170. The stomach was first washed out and about two quarts of black fluid evacuated, after which the abdomen became almost flat. Posterior gastro-enterostomy disclosed adhesions between the pylorus and liver, some of which were broken down. A spastic ileus of the small intestines was also present, the large intestine being slightly distended, no cause for which was found. Death occurred early the next morning.

Wound autopsy by Dr. Libman. The stomach was moderately dilated and a large ulcer was found on the posterior wall at the pylorus. The ulcer had a very sharp edge. The greater portion of the ulcer extended through the stomach wall, a part of the floor being made up of the pancreas covered with inflammatory tissue, and part by the left lobe of the liver. The edge of the ulcer at the last mentioned place was very thick and looked carcinomatous. (Microscopical examination showed only the evidence of acute inflammation). There were adhesions between the stomach, colon, liver, ascending colon and between the loops of the small intestine. The stomach otherwise showed the lesions of an acute gastritis. Liver and spleen negative; beginning congestion. The upper part of the small intestine was moderately dilated. In the middle third was a contracted portion about 30 cm. long, but this did not present the appearance of a spastic ileus.

3. PYLORIC STENOSIS.

Among the cases of stenosis of the pylorus the following deserve particular notice.

Case VIII. Benign Pyloric Stenosis Secondary to Gastric Ulcer; Pulmonary Tuberculosis; Finney Operation; Recovery.—Max S., Russian, forty years of age, peddler, was admitted May 21, 1903. Family history and previous history negative.

Present history of three years' duration, beginning with pressure in the epigastrium and occasional vomiting, not bloody. For the past six months vomiting daily, especially at night, large amounts of mucus and food; no blood. For the same length of time has had attacks of abdominal cramps, not radiating, two or three hours after each meal. Bowels constipated.

Physical examination showed signs of tuberculosis in apices. Sputum contained tubercle bacilli. Otherwise examination was negative except that there was a large splashing stomach which extended to just below the umbilicus; palpation was negative; no increased peristalsis. Average of test meals: Total acidity 84, free hydrochloric acid 60; no blood. Delayed motility; capacity of stomach 2,000 c.c.

As all the local treatment had failed to give any relief in spite of daily stomach washing, and as the patient was rapidly losing weight both from inanition and the extension of the tuberculous process in the lungs, operation was decided on and he was transferred to the services of Dr. Lilienthal, who, on May 23, performed the Finney operation.

The stomach was found much dilated with considerable thickness in the pyloric region on the posterior surface. The mass did not feel cancerous but more like a cicatrizing ulcer. On the anterior surface of the pylorus were a few small spots in which the peritoneum was opaque; also one small yellowish tubercle. For twenty-four hours after operation vomited repeatedly, vomitus containing blood.

May 31.—To-day was placed on soft diet. No vomiting for several days.

June 13.—Wound healed. Discharged cured. No vomiting; no gastric disturbance. Patient gaining in weight.

The patient's total gain in weight was forty pounds and when seen some months afterward his general condition was excellent, and the tuberculous process in both lungs showed very decided improvement.

The association of tuberculosis with ulcer of the stomach is by no means infrequent. In some cases, as in the present one, the progress of the disease is very much hastened by the inanition which results from the incessant vomiting. That so brilliant a result should have been accomplished in this case was scarcely to have been expected since the patient's general condition at the time of operation was quite miserable. Almost a year has elapsed since the operation and the improvement in his condition still continues.

Case IX. Benign Stricture of the Pylorus, Secondary to Ulcer of the Stomach Associated with Hematemesis and Severe Pain Which Did Not Yield to any Treatment; Finney Operation; Prompt and Satisfactory Cure.[1]—Mary W., twenty years old, admitted February 24, 1902.

[1] Mt. Sinai Hospital Reports, Vol. III, p. 368.

During three years prior to operation there had been epigastric pain after eating. This pain became more severe five weeks before admission, and vomiting then set in. Within three days of her admission patient had two severe attacks of hematemesis. For three weeks after admission patient was fed exclusively on nutrient enemata. During this time there was marked improvement in the general condition. On April 3 the vomiting recurred and hemin crystals were found in the vomitus. Following this there were several attacks of pain and vomiting, and on April 12 there was an attack of severe pain in the epigastrium and right hypochondrium, radiating to the back. A few days later vomiting recurred and icterus was noticed for the first time. A trace of bile was found in the urine. The pain and vomiting continued, and the icterus became more marked, so the case was transferred to the surgical division.

The chemism was as follows: Test breakfast on March 26: 100 c.c.; well digested; total acidity, 78; free hydrochloric acid, 28; combined, 42; starch digestion much delayed.

March 27, 180 c.c. obtained; total acidity, 58; free hydrochloric acid, 36; combined, 30.

March 28, while fasting, through the tube 30 c.c. clear fluid obtained with high hydrochloric acid (60).

On April 26 pyloroplasty was done by Dr. Lilienthal, according to Finney's method. An incision was made in the right hypochondrium through the rectus. Gall-bladder and ducts were found normal. The stomach was dilated. The pylorus just admitted the tip of the little finger; nothing else abnormal was found except an indurated area on lesser curvature near the pylorus, evidently on old ulcer. The pyloroplasty was done with silk Lembert sutures inserted between the stomach and duodenum. When these sutures were tied, stomach and duodenum were united from pylorus to a point about four inches from pylorus. A second row of Lembert mattress sutures was inserted but not tied, this second row being parallel with the first row and about three-quarters of an inch from it. A curved incision, like an inverted U, was then made from a point between the ends of the two rows of sutures into the stomach, thence parallel and between the rows of sutures through the pylorus, and down the duodenum to a point opposite the place of beginning. The first row of sutures was then reinforced by through-and-through sutures fastening stomach securely to gut, and then the second row was tied and reinforced (Finney's operation). A small drain was left in and the abdominal wound sutured. Uneventful recovery. Discharged cured May 17 and has remained so.

The next is another case of benign pyloric stenosis secondary to ulcer in which the Finney operation gave very satisfactory results, but which a number of months later was followed by a return of hematemesis from the probable formation of a fresh ulcer.

Case X. Benign Pyloric Stenosis Secondary to Ulcer of the Stomach; Finney Operation; Recovery.—R. L., Russian, aged forty-four years, housewife, was admitted February 19, 1903. She has been ill four years and in bed three months. Her illness began with copious vomitings, bearing no relation to the ingestion of food. The vomiting has increased and for the past year she has subsisted only on fluids. Two years ago, in addition to constant abdominal pain, the patient experienced sharp, piercing pain coming in paroxysms and radiating to the shoulder. These were very severe, resembling those of labor, and caused the patient to double up and cry out. The last attack occurred three weeks ago. These attacks are not accompanied by vomiting. There has been marked loss of flesh and strength.

Physical examination of the abdomen was impossible since the rigidity was extreme.

Test meal, ℥xii; total acidity, 80; free hydrochloric acid, 58; no blood. Distension of stomach showed marked dilation. Treatment: Lavage and antacids.

February 26.—Test meal, ℥xii; total acidity, 45; free hydrochloric acid, 26; no blood. Length of tube introduced to obtain stomach contents, 21 inches. Capacity of stomach, two quarts.

February 28.—test meal, ℥xxviii; total acidity, 122; free hydrochloric acid, 75.

March 2.—Patient on daily lavage. Still complains of pain.

March 5.—On rectal feeding; pain continues. ℥iv stomach contents in the average quantity obtained in several examinations of the empty stomach. The fluid contained quantities of hydrochloric acid and food particles.

March 11.—Test meal, ℥x; total acidity, 38; free hydrochloric acid, 16.

March 12.—Gaining weight under combined mouth and rectal feeding. Abdominal pains much less severe. Stomach washing every morning contains less residue than at beginning.

March 23.—Gastric measurements:

	Undilated.	Dilated.
Mid line above umbilicus . .	9.5 cm.	9.5 cm.
Mid line below umbilicus .	4.5	6.5
Mid line right umbilicus . .	7.5	9.75
Mid line left umbilicus . .	7.5	10.5

The temporary improvement which was above noted did not last long; on the contrary, the patient's pain and the vomiting returned, necessitating rectal feeding. In spite of this the patient's general condition did not improve and she was transferred to the surgical service of Dr. Lilienthal, who, on April 7, performed the Finney operation.

At the operation a benign stenosis of the pylorus was found secondary to gastric ulcer on the posterior wall. Convalescence was uneventful and she was discharged April 30, 1903, very much improved, having gained considerably in weight, free from vomiting but still complaining

occasionally of abdominal pain. On October 13, 1903, she was readmitted. The present history is that after having been very comfortable with the exception of occasional nausea and epigastric pain, which, however, is much less than before the operation, she began a week ago to complain of anorexia and vomiting which was independent of eating. There was also pain in the abdomen and back. Her chief complaint, however, was the vomiting which contained blood.

Physical examination was entirely negative. Examination of the stomach shows a capacity of 1,800 c.c. and no evidence of dilatation. Total acidity 58, free hydrochloric acid 20. Further tests were rendered impossible, since there has been daily vomiting of dark, coffe-ground material. Rectal feeding with excellent results and she was discharged cured on November 9.

4. PERIGASTRITIS.

There is no more striking proof of the great strides which have been made in the diagnosis and treatment of gastric disorders, than has been shown in the recent work on gastric adhesions, *i.e.*, perigastritis. For most of our knowledge of this subject we are indebted to the surgeons, and if the *furor operandi* on the stomach extends to much greater length, we will probably learn much more about perigastritis. That so little stress has been laid upon the clinical relations of perigastritis is all the more surprising since, as is well known, five per cent. of all autopsies shows gastric ulcers or their scars, and according to Soltau Fenwick, in 40 per cent. of these stomachs there are adhesions.

The clinical relations of these adhesions are most important, and the debt we owe surgery in the relief given to many of these cases is no small one—provided, of course, that the future does not show that the new adhesions which form after the operation do not in turn produce symptoms.

Fenwick [1] has classified 123 cases of gastric ulcer with adhesions. The figures are instructive.

Organ.	No. of Cases Adherent.	Per Cent.	
Pancreas (alone)	49	40	74.9
Liver (alone)	33	26.8	
Pancreas and Liver	10	8.1	
Colon	7	5.7	
Liver and Colon	4	3.2	
Spleen	2	1.6	
Mesentery	3	2.4	
Three or more organs[2]	15	12.2	

As regards site all observers agree to the relative freedom of the anterior surface, the freer movement of which readily affording the explanation for its immunity.

In a recent report of 42 operations for perigastritis associated with gastric ulcer, Paton[3] has concisely reviewed the symptomatology. The leading feature is the chronicity of the symptoms which fail to yield to any plan of treatment, including the most stringent Leube cure. The pain and local tenderness may be often confined to one area, or it may be variable in this regard. The severity also varies; so do its relations to food, since the taking of food has less influence in causing pain than in simple ulcer. Posture and sudden exertion have greater effect. Vomiting is not so frequent in occurrence. Jaundice and other symptoms depend on the relation of the adhesions to the adjacent organs. Fasting has no effect on the pain or other symptoms—indeed, it is the failure of all plans of treatment that leads us to suspect the presence of adhesions.

Two cases of peripyloritis may be presented to illustrate some of the clinical phases. The results of the surgical treatment of Case XII also demonstrates that the subsequent course may warrant conservatism in the prognosis.

Case XI. Ulcer of Stomach; Peripyloritis; Exploratory Operation; Recovery.—Annie S., thirty-three years of age, German, admitted October 25, 1902, with the history that eight months ago she had an attack like the present one with pain in the epigastrium after eating and relieved by vomiting. At this time she had hematemesis and was in the German Hospital for four weeks. Her present illness is of two weeks' duration. There has been a constant feeling of weight in the epigastrium and sharp pains over the stomach, radiating laterally to either side and through the back, after meals. An hour after eating there is vomiting with relief of the pain. The vomitus consists of black coffee-ground material followed by the digested food. Vomiting is preceded by nausea. Anorexia present. Bowels constipated. Stools firm, black and contain blood.

Physical examination: Stomach not enlarged to percussion. Some tenderness to the right of the median line two fingers below the ensiform. The tube was not introduced. Patient put on rectal feeding.

October 27.—Has not vomited since admission. Pain less severe; tenderness slight.

November 9.—Yesterday patient complained of pain and vomited; severe epigastric tenderness. About two fingers above the umbilicus and in the median line, a small body is to be felt the size of a chestnut, just to the right of the aorta. It lies transversely at the level of the eighth costal cartilage and can be felt under the right rectus.

Test meal: ℥ii well digested. Total acidity 36, free hydrochloric acid 10.

November 13.—Test meal: ℥iii, well digested. Total acidity 56, free hydrochloric acid 26.

As the patient's symptoms persisted in spite of treatment and as she was rapidly losing weight, she was seen by Dr. Gerster, who advised operation.

November 17.—Exploratory laparotomy was done by Dr. Gerster. The operation revealed a healing ulcer of the pylorus with a peripyloritis.

1 Ulcer of Stomach and Duodenum, 1900, p. 29.
2 Including pancreas, liver, diaphragm, abdominal wall, colon, spleen, omentum, mesentery, kidney and right adrenal.
3 Lancet, Feb. 6, 1904.

No gastro-enterostomy was done, the operation being simply exploratory. Subsequent to the operation all symptoms disappeared and she was discharged cured on December 12.

How much the operation contributed to the patient's recovery must remain an open question. In fact, in view of the findings its value may well be questioned, yet the patient's condition and the presence of the suspicious mass above mentioned made the indications for it seem justifiable.

The following case, a fatal one, of gastric ulcer, peripyloritis and diffuse adhesive peritonitis presents some peculiar and unique features.

Case XII. Gastric Ulcer; Peripyloritis; Posterior Gastro-enterostomy; Entero-enterostomy; Recovery; Subsequent Persistent Vomiting from Formation of Extensive Peritoneal Adhesions; Laparotomy; Division of Adhesions; Recovery; Reformation of Adhesions Causing Recurrence of Vomiting; Laparotomy; Death.[1]—Betsy B., twenty-two years of age, had been operated upon in Vienna for some gastric trouble two and one-half years before. After the operation she was fed through a gastrostomy (?) wound for five months, when the opening into the stomach was closed by suture. She left the hospital in Vienna feeling well, and remained so for one year. Five weeks before admission she was seized with epigastric pain radiating to right side and back. For the last twelve days she vomited everything she ate or drank. There was no pain after eating, but almost immediate nausea and vomiting. No hematemesis. No blood in stools. Several chills occurring with attacks of severe pain. On admission, January 29, 1902, there was a laparotomy scar in epigastrium; exquisite tenderness over pylorus, where a mass of adhesions (?) was to be felt. Stomach by percussion was dilated upward. On administering milk it was returned within thirty seconds, coagulated and acid. Stomach tube was easily passed through the cardia.

January 30.—Patient vomited fresh blood, and again on January 31 she vomited two ounces of fresh blood.

For a week she was fed exclusively per rectum. Pain and vomiting continued. Temperatures between 99° and 100.8° F., pulse rate 70 to 90. Urine contained a trace of albumin, no casts. White blood cells, 10,300.

February 7.—Transferred to Dr. Gerster's service for operation. Laparotomy for gastric ulcer and peripyloritis. Incision through scar of previous operation. Numerous firm adhesions between intestines, and especially between the under surface of the liver, gall-bladder and pylorus. Though evidences of healed pyloric ulcers were visible, no recent ulcer could be located. The pylorus was much injected. The jejunum was firmly adherent to abdominal parietes, from which it was inferred that at the previous operation a jejunostomy had been performed. In prolonging the incision downward the adherent loop of jejunum was incised. It was at once freed and the rent repaired. This narrowed the lumen of the segment very materially. After further seperation of adhesions, a posterior gastro-enterostomy with Murphy's button was established, and in order to overcome the narrowed loop of jejunum an entero-enterostomy was performed, this excluding this loop of intestine. Through-and-through abdominal sutures. Drainage. The patient, though in very wretched condition, bore the operation nicely. She vomited a bile-stained fluid for several days, but after repeated lavage this ceased. The wound healed slowly; several stitch holes became infected.

February 22.—Patient was out of bed; felt well; no pain; no vomiting; takes solid food; had not passed the buttons. She remained well until March 9, when she again commenced to vomit.

March 11.—Passed one button (thirty-second day).

March 19 to 25.—Vomited at times; general condition good.

March 27.—Vomiting very frequently—large amounts of greenish material. Patient was rapidly losing ground. On this account it was decided to reopen the abdomen, supposing that either a contraction of the gastro-enteric orifice or an impaction of the Murphy button was the cause of the persistent vomiting.

March 28.—Laparotomy for postoperative adhesions. Incision through old scar. Numerous intimate adhesions were encountered, matting together into an intricate mass the small intestines and stomach. The separation of these adhesions was cautiously done, but nevertheless a loop of jejunum was incised. Immediate repair. Examination of the gastro-enteric anastomosis showed no impacted button, nor could the button be felt in the stomach. The orifice was not contracted, easily admitting two fingers. The entero-enteric anastomosis was likewise firm and its orifice adequate. The button was not impacted. The loop of jejunum which had been incised at the previous operation, and doubts of whose sufficient patency were had at the time, was examined and found to be of adequately large lumen. The loops of ileum were much contracted, whereas the jejunum was distended. After freeing all adhesions the lower coils of small intestines became distended. It was therefore presumed that the adhesions were the cause of the vomiting, and after a further unsuccessful search for the button the intestines were replaced and the abdomen closed.

April 1.—Again the patient vomited for several days, but this stopped and immediately she commenced to gain flesh and strength.

April 21.—She developed mastoid disease, necessitating opening of mastoid.

May 16.—Vomiting again; which gradually became more frequent until she could retain no food. Gastric lavage did not check the vomiting. Rapidly failing in strength.

May 22.—Repeated vomiting and poor condi-

[1] Mt. Sinai Hospital Reports, Vol. III, p. 197.

tion necessitated a third interference. Incision through old scar. Findings were practically identical with those at the previous operation; dense intimate adhesions of all the intestinal coils to each other. The lower portion of the ileum was collapsed; the upper loops of jejenum were in part collapsed and in part distended. Numerous kinks due to adhesions were straightened out. The adhesions were separated; they were too extensive to permit of being covered with Cargile membrane. The intestine below the entero-anastomosis was fixed into the abdominal wound so as to enable the patient to be fed through a jejunum fistula, if this was necessary. Closure of rest of wound. Vomiting persisted and did not subside after lavage.

May 23.—The intestine in the wound was opened, but a catheter could not be passed into it a sufficient distance to enable nourishment to be given in this way. Vomiting continued.

May 24.—During an attack of vomiting the small intestines were crowded out of the lower angle of the wound. They were immediately replaced. Soon after this the patient collapsed and died—a most sorrowful termination after so much heroic courage and suffering.

SYMPTOMATOLOGY AND COURSE OF GASTRIC ULCER.[1]

BY MAX EINHORN, M.D.,
OF NEW YORK;
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It is well known that the symptoms of gastric ulcer are quite manifold. In a number of instances there are no outward manifestations of an existing ulcer, until accidentally discovered at a laparotomy or by the appearance of a hemorrhage.

S. Fenwick and W. S. Fenwick[2] make a distinction betwen acute and chronic ulcer of the stomach. But taking into consideration the possibility of a latent period of an ulcer, we are never sure when its existence began. The acuteness of the symptoms does not necessarily mark the beginning of the disease. For this reason it appears to me that from our present knowledge we are not warranted in subdividing clinically a group of acute ulcer of the stomach.

The symptoms ordinarily met with in gastric ulcer are the following:

1. *Pains.*—Patient experiences pain in the epigastric region shortly after meals. The pain is generally more pronounced after eating coarse articles of food, and is occasionally also felt at the left side of the back (in the lumbar region). The same areas (epigastric and left lumbar region) are likewise tender as a rule, or, more correctly, painful to pressure. It is characteristic of this affection that even moderate or slight pressure produces a painful sensation. In rare instances, however, this symptom is lacking.

2. *Vomiting.*—Regurgitation of part of the food and vomiting half an hour to one to two hours after meals is frequently met with. If present, however, it does not necessarily form a constant phenomenon, and may appear for a few days in succession off and on. Both the regurgitation and the vomiting are preceded by attacks of pain, which are usually relieved by the emptying of the organ.

3. *Hemorrhage.*—Hemorrhages from the site of the lesion frequently take place. If small, however, they often escape detection. When moderate or of considerable size they are seldom overlooked, for they then generally give rise to hematemesis or melena, or to both.

Blood, if present in sufficient quantity, is easily recognized in the vomited matter, or in the dejecta, by its appearance (red, coffee-brown, and tarry). When, however, the macroscopical appearance does not betray its presence, Weber's[1] test may frequently reveal it. This test is executed as follows: The fluid to be examined is mixed with a few cubic centimeters of glacial acetic acid and thoroughly shaken with sulphuric ether. The ethereal extract presents a Tokay-wine color if blood be present. If the color is not distinct, add to the ethereal extract equal parts of freshly prepared tincture of guaiacum and ozonized oil of turpentine which produce a blue color in the presence of hemoglobin.

Recently Boas[2] and following him Hartmann[3] and others have advocated the examination of the gastric contents and of the feces by means of Weber's test, in order to discover these so-called concealed hemorrhages. In a number of cases of ulcer of the stomach these small hemorrhages can thus be discovered from time to time by examining the vomitus or the stool, according to Weber.

It is important to know, with regard to this test, that raw meat and, according to Hartmann, even boiled meat is apt to give the reaction, even if there be no hemorrhage. For this reason meats must be eliminated from the diet for a few days previous to making Weber's test.

The symptoms accompanying a profuse gastric hemorrhage are principally those caused by the loss of blood and are similar to those encountered in any acute hemorrhage (pallor, giddiness, weakness, fainting spells, extreme thirst). Occasionally there is a rise of temperature present for a few days.

4. *Appetite.*—The appetite is as a rule not impaired. The patient, however, takes very little food on account of the pain.

5. *Cachexia.*—The general state of nutrition of the body is sometimes good, especially if the

1 Read before the American Gastro-enterological Association, June 6, 1904, Atlantic City, N. J.

2 S. Fenwick and W. S. Fenwick: Ulcer of the Stomach and Duodenum. London, 1900.

1 H. Weber: Berliner klinische Wochenschrift, 1893, No. 19.

2 I. Boas: Ueber occulte Magenblutungen. Deutsche med. Wochenschrift, No. 20, 1901.

3 Hartmann: Ueber Anwendung und diagnostische Verwertung der Weber'schen Blutprobe bei occulten Magen- und Darmblutungen. Archiv f. Verdauungskrankheiten. Bd. 10, Heft I. S. 48.

ulcer is not of very long standing. When the latter, however, has lasted a very long time cachexia is almost always present.

It is self-understood that the above symptoms need not all exist at the same time. Sometimes one symptom (vomiting, pain) is constantly present and forms the main feature of the disease. Now and again one certain symptom alternates with another.

Gastric Functions.—Gastric secretion is frequently increased in quality (hyperchlorhydria) as well as in quantity (hypersecretion). A number of cases, however, go along with a normal gastric juice and a few with a diminution or total absence of the same.

The motor function is generally normal, excepting when the ulcer involves the pyloric region or its vicinity. In the latter instance it is usually retarded. Sensibility is often increased, as evidenced by the pains after the ingestion of food. Hydrochloric acid in weak solutions, and other irritating substances, produce pains in the stomach soon after their administration. Orthoform, as shown by F. H. Murdoch, or still better anesthesin, frequently allay the pain, as they serve as a local anesthetic. Large doses of subnitrate of bismuth act in a similar manner, forming a cover over the affected area.

Course.—Gastric ulcer sometimes heals spontaneously by cicatrization. In the majority of cases the healing process does not go on so easily. Favorable conditions must first be created before a cure is possiblbe. Rest of the entire organism and principally of the stomach is here of the greatest importance. In most instances an abatement of the symptoms takes place, and in a great many instances a real cure is established. In some the ulcer remains open and soon gives rise to a new outburst of symptoms. But a few cases show no tendency whatever to heal, and the patient may succumb to hemorrhages, perforation, or to the inability to take food, resulting in consecutive starvation.

Ulcers near or within the pylorus are much slower in healing and frequently cause continuous hypersecretion with or without ischochymia. They are difficult to manage and often require surgical aid (gastro-enterostomy) in order to make a cure possible.

Russell[1] has tried to investigate the after-history of cases of gastric ulcer with hemorrhage. The result of his inquiry was as follows: The direct mortality from the disorder has amounted to 2.1 per cent., 4.3 per cent. have died from intercurrent disease, 42.6 per cent. have ended in recovery—27.7 per cent. having had but a single attack and 14.9 per cent. having recovered after one or more relapses; 6.4 per cent. cannot as yet be classified; they appear to be on the border line between recovery and continuance of the disorder, and will eventually fall into either class. Finally, 44.7 per cent. were suffering from stomach symptoms of more or less severity at the time of the last report, 14.9 per cent. getting repeated and definite attacks, with intervals of immunity and 29.8 per cent. suffering from almost continuous pain.

This report of Russell is quite discouraging; a similar view is entertained by Debove[1], for he gives the following figures for 100 cases of ulcer:

Perfect cure	50
Perforations and peritonitis	15
Foudroyant hematemesis	5
Pulmonary tuberculosis	20
Inanition	5
Different complications	7

My own experience is, however, decidedly more favorable. I have seen a much larger percentage of seemingly permanent recoveries than that given by either Russell or Debove. It may be that the way the patients live after the cure has much to do with their future. Those leading a rational life, avoiding too coarse foods and violent exercises have a greater chance of remaining well than those who cannot have the much desired care. This would easily explain the larger percentage of the recurrence of the disease in Russell's patients, who were hospital cases and belonged to the poorer class, often unable to heed the necessary dietetic rules.

1 J. W. Russell: A contribution to the after-history of gastric ulcer. The Lancet, London, Jan. 30, 1904, p. 288.

1 Debove and Rémond: Maladies de l'estomac, p. 276, Paris.

FURTHER REMARKS ON ORTHOFORM IN THE DIAGNOSES OF GASTRIC ULCER.[2]

BY FRANK H. MURDOCH, M.D.,
OF PITTSBURG, PA.

Two years ago, I presented a paper at a meeting of this Association, entitled "Orthoform in the Diagnosis of Gastric Ulcer." Since that time I have seen three additional cases in which this remedy was of great value in differentiating gastric ulcer from other painful affections of the epigastrium.

Case I.—July 3, 1903, Mr. M., aged sixty years, bookkeeper, consulted me, and gave the following history: In February, 1901, that is a year and a half before he came to me, he had a severe attack of pain in his abdomen, which was of such severity that a hypodermic injection of morphine was necessary to relieve it. After this attack he complained of pain and soreness in the the right iliac region; and the attending physician, suspecting appendicitis, called in a surgeon, who decided that his appendix was in a healthy condition, and therefore not responsible for the previous attack of pain. In May, 1902, and again in May, 1903, he had an attack similar to the first, and in both instances had morphine hypodermically to relieve him. After each attack he remained in bed and lived on liquid food for two or three weeks.

Present Condition.—He looks rather pale, has lost five pounds in weight. Appetite good, bowels

2 Read at a meeting of the American Gastro-enterological Association, in Atlantic City, June 6, 1904.

constipated, sleeps well. Physical examination is negative, excepting that there is one very sensitive spot in his epigastrium. Examination of the stomach contents showed that free hydrochloric acid was absent, rennet and pepsin present. The diagnosis was chronic gastric ulcer with resulting gastralgia. He was due at my office in the afternoon of the next day, to receive directions as to diet, etc., but instead of coming to see me, he sent for me in haste, as he was having another attack of pain. I found him suffering intensely, but instead of giving him a hypodermic injection of morphine I administered eight grains of orthoform, and in twenty minutes he experienced entire relief.

Case, II.—Mrs. A., aged thirty-eight years. Consulted me November 29, 1902. When fifteen years of age she had an attack of stomach trouble which lasted two months. She complained of bloating and belching, and much distress after meals, relieved by vomiting. After this attack she remained perfectly well for six years, at which time she was married, and soon after her marriage became pregnant. Two months after conception she was seized one morning with severe pain in the epigastrium, which was relieved at the end of two hours by an anodyne. During the last seven months of her pregnancy she had a severe attack of pain every week or two, relieved by vomiting. After her confinement, when the child was only seven days old, she had another attack; and has had them at longer or shorter intervals ever since, covering altogether a period of seventeen years. She has consulted many physicians, and the diagnosis usually made was biliary colic. Her appetite has always been good, her bowels constipated, moving only when she took a laxative. There was much gas in the stomach and transverse colon, and one circumscribed spot of great tenderness in her epigastrium. Free hydrochloric acid was present, Töpfer's test showing an acidity of 16; total acidity 60. The diagnosis was gastralgia the result of chronic gastric ulcer.

It was on Saturday that I first saw her, and she was directed to come in again on Monday for instructions as to diet, etc. On Sunday afternoon her husband telephoned me from a drug-store to say that she was having an attack of pain and was suffering intensely. I instructed the druggist to give him eight grains of orthoform, with directions to administer it to his wife as soon as he reached home, and I would call as soon as possible. In half an hour she was relieved.

Case III.—March 21, 1902, Mrs. McK., aged thirty years. Complaining of stomach trouble for twelve years. At first the attacks came on once or twice a year, lasting two or three weeks, and were characterized by distress after meals, with much bloating and belching. Gradually they became more frequent and more severe until for three years past there has been no period of relief except for a day or two at a time. Examination shows that there is a mitral presystolic murmur, the stomach is dilated, the lower border reaching three inches below the navel, the right kidney is in the third degree of displacement, and there is one very tender spot in the epigastric region and one to the left of the lower dorsal vertebræ.

Examination of the stomach contents after Ewald's test meal shows that free hydrochloric acid as well as the ferments are absent. Rennet zymogen is present. The diagnosis was chronic gastric ulcer, and the treatment rest in bed and liquid food. Treatment, however, had little effect in relieving her. The distress in her stomach, as well as the bloating and belching continued, so that at the end of two months there seemed to be little if any improvement in her condition, and the tenderness in the epigastrium persisted. Two physicians who saw her in consultation did not agree with me in the diagnosis, but attributed her symptoms to gastritis. On June 10, after she had been under treatment for nearly three months, she was suddenly seized one evening at eleven o'clock, with such severe pain in the epigastrium that a hypodermic injection of morphine was necessary to relieve her. I did not see her in the evening when the attack came on, but saw her next morning and directed orthoform to be given should the pain recur.

About noon of the same day a sharp pain began to shoot through from the tender spot in the epigastrium to the tender spot in the dorsal region, which lasted only for the fraction of a second, but was so severe as to cause her to cry out. At first this pain came on about every half hour, but gradually became more frequent until about ten o'clock in the evening there was an interval of only a few minutes between them. At eleven o'clock she took an orthoform powder, and in twenty minutes the pain ceased and she slept quietly until morning. The pain returned at six A.M. and at twelve noon; also at 1:30 A.M. and nine A.M. of the following day, but was promptly relieved by the remedy. She took altogether five powders. Each of the first four powders relieved her for about six hours. After the last powder there was no return of the pain.

The fact that orthoform so promptly relieved the pain in this case could leave no doubt as to the presence of an ulcer; *and it also showed that in spite of rest in bed and liquid food for nearly three months the ulcer still remained open.* This patient was in bed altogether four months and lived on liquid food for five months. She made a complete recovery.

Here, then, are three cases, in one of which appendicitis had been suspected; in another the usual diagnosis had been biliary colic; and in the third case a diagnosis of gastritis was made by at least two physicians. The correct diagnosis was established in each case by the administration of orthoform for as this remedy will not anesthetize nerve endings when they are protected by skin or mucous membrane, it is certain that if it relieves pain in the stomach it can do so only by coming in contact with a surface from which the mucous membrane has been removed.

TWO OLD FRIENDS: CASTOR OIL AND SALTS.

BY EDWARD P. CARLTON, B.SC., M.D.,
OF KEYESER, WIS.

Every physician, and especially a country physician, who dispenses his own medicines, has frequent occasion to observe the administration of either castor oil or magnesium sulphate.

Both have a disagreeable taste. The mere anticipation of a dose of either being enough to produce repugnance and nausea in many individuals. Children especially, soon learn to object strenuously to either.

Both castor oil and magnesium sulphate are inexpensive, and they have many desirable peculiarities not found in the other and more recent substitutes.

For some time I have been using large quantities of both castor oil and salts without any friction or bribery, and giving them continuously to delicate and sensitive patients, even without their knowledge of the fact.

Thinking that others might be interested in my formulæ, I give them below, without, however, claiming any great originality or ingenuity in preparation.

I.

Olei Ricini Dulcis.

℞ Vanillin,	gr.xx	1.5
Olei. menth. pip.,	℥j	4.0
Garantose (saccharin),	℥jss	4.0
Alcohol,	℥jii	100.0
Tinc. persionsis,	℥ss	15.0
Olei Ricini, q.s. ad. one-half gallon,		2000.0

Directions for Mixing.—Dissolve the vanillin, oil of peppermint and garantose in the alcohol. Add the tincture of cudbear to the oil and shake thoroughly. Finally unite the two mixtures.

This mixture keeps well, looks nice, is pleasant to take, does not leave a bad after-taste; requires no urging to get it down and, therefore, for all practical purposes, is a *disguised oil.*

II.

Liquor Magnesium Sulphatis Compositus.

Magnesii Sulphatis	℥xxxii	1000.0
Fluidi cardamomi comp.,	℥ii	30.0
Vanillin,	gr. xx	1.5
Garantose, "crest," Merck,	℥ii.-iv	8 to 16.0
Alcohol,	℥ii	60.0
Glycerin	℥ii	60.0
Coffee, roasted and ground,	℥ii	60.0
Aquæ q.s. ad. one-half gallon		2000.0

Directions for Mixing.—Stir the ground coffee in one-half gallon of boiling hot water, and allow it to stand for ten to twenty minutes. While this is still hot add enough of it to the magnesium sulphate to make about three and one-half pints. Dissolve the vanillin in the alcohol, add the glycerin to it and then the cardamom. When the first solution has cooled somewhat add the second mixture to it. After shaking thoroughly add the garantose ("crest")[1] and enough of the coffee infusion to make one-half gallon. Finally filter through a covered filter.

An ounce of this solution contains one-half an ounce of magnesium sulphate.

This solution keeps well, has a dark, whiskey-like color, a nutty odor and is easy to take, warm or cold. I dilute it with twice its volume of water at the time of administration.

[1] Heretofore I have used the plain garantose in alcoholic solution, but in the future I intend to use garantose "*Crest*" (Merck), which is soluble in water.

INTERNAL ANTISEPSIS.[1]

BY J. N. HALL, M.D.,
OF DENVER, COLORADO.

Until a few years ago the surgeon assumed the responsibility for most of the deaths from sepsis. The improvement in his methods of work has produced no more striking result than the almost total elimination of this term from the list of the causes of death of his patients, while the physician still signs a comparatively large number of certificates bearing this opprobrious designation. No more fertile field presents itself for our attention than this one. Fortunately we are encouraged by the recent general attention given to this subject by the profession, and by the favorable results which have attended, in small measure to be sure, some of the work along this line.

The more general use of the antitoxins, which I shall briefly mention in this paper, might at first sight appear to render unnecessary a struggle for a system of internal antisepsis. Yet when we consider that, for instance, a definite croupous pneumonia may be caused by many different organisms, and that, until bacterial examination becomes more available than it now is in clinical examination, we shall be unable to administer the right antitoxin even if we have it, at the very beginning of the disease, as is so generally imperative if we look for good results, we must conclude that in this disease, as in many others, we shall long have opportunity for battles against a more or less general sepsis. We need not fear that our efforts will be wasted.

We assume that in all cases wherever possible surgical measures should be taken for the prevention of sepsis. It is vastly more scientific to drain an abscess than to attempt to treat a subsequent sepsis by medical measures. To the attainment of this better result where possible the physician may contribute by earlier diagnosis and the more prompt calling in of surgical aid.

But in those cases seen too late, or in which prevention, according to our present light, is out of the question, we must seek aid by means of medicines. As an example take typhoid fever, or sepsis of so-called cryptogenetic origin. Here treatment through the blood stream seems at present our only recourse.

An antiseptic in the laboratory must either prevent the growth of septic organisms, or destroy them. Their ability to do harm lies not so much

[1] Read before the American Therapeutic Society, June 3, 1904.

in the few which first enter the blood stream as in the capacity of these for indefinite multiplication. An infinitely less powerful antiseptic suffices to prevent reproduction than is necessary to cause the death of the parent organism. It is likely that more is to be accomplished by attempts to attain the former end than the latter. It is the newly-bred plasmodia of malarial fever which are killed by quinine rather than their progenitors. A step further and we should be able to prevent their propagation.

We may even conceive of such action of a drug that, while it did not interfere with the propagation of micro-organisms, might result in destroying their ability to develop their peculiar toxins. Although the opium-bearing poppy grows in England it is worthless for the production of its alkaloidal elements.

One of the most important fields for our study lies in the digestive tract, and here, thus far, the most important results have been accomplished.

Many digestive diseases result from failure of one of nature's agencies to do the work set for it. It is probable that we escape many serious infections owing to the antiseptic effect of the two parts per thousand of hydrochloric acid in our gastric juice, most notable among these being cholera. It is fairly established that in any reasonable numbers comma bacilli are unable to survive the acidulated bath which greets them upon entrance to the normal stomach. In the present light there seems little doubt that Pettenkofer, after the neutralization of his gastric juice with sodium bicarbonate, and the swallowing of a cholera culture, did actually suffer from cholera of mild degree. Nature, then, furnishes us the first example of internal antisepsis for our study.

The reported hyperacidity, as judged by human standards, of the digestive fluids of carrion-eating birds is a point deserving of attention. The millions of virulent organisms swallowed thus become harmless, although we must assume also a relative insusceptibility in these creatures.

It is probable that the long practised exhibition of hydrochloric acid in typhoid fever is really soundly based upon two foundations. It probably acts in part by improving nutrition through supplying a digestive ingredient lessened by the fever, thus promoting normal digestion; and in part by the prevention of growth of organisms of fermentation in the intestines of the subject weakened by the fever. The giving of this acid to those patients whom we so often see, suffering from flatulence because of imperfect gastric digestion, resultant inability of the intestine to do its portion of the work, and consequent development of fermentation and putrefaction in the starchy and other ingredients of the intestinal contents, is really a measure of antiseptic medication in its final result. Hammarsten states that "Putrefaction does not occur in the small intestine as long as the contents are strongly acid."

Wilcox and others have pointed out the mode of action of chlorine in typhoid fever in lessening the development of the causative bacillus and consequently of its toxins, in part at least by increasing the secretion of bile, and their results encourage us to still further study along this line. Yet the recent total collapse of a proposed antiseptic treatment of this disease when put to the actual test in the wards of a great Government Hospital is fresh in our minds. It had received wide attention because of a specious plausibility. Yet the results were what a sound thinker might expect in view of the almost total disregard of the pathological aspects of typhoid fever. It may be that we shall be able to influence in a measure the symptoms arising from the absorption of the toxins of the bacillus of Eberth, but we must not forget that often the bacilli are established in the spleen and mesenteric glands, in the lung or even the meninges, and we must at least consider these things in our scheme of treatment. We shall scarcely cure a typhoid meningitis by the exhibition of intestinal antiseptics.

A word of caution against the too strenuous use of these remedies, for we should at least beware of doing harm. I have recently seen a well marked case of acute nephritis resulting from the too free use of salol in the treatment of a moderately severe attack of typhoid fever. The urine had the appearance of that so familiar to those of us who were in hospitals in the days of the free use of carbolic acid as a surgical antiseptic. Other similar examples have come to my notice, and I doubt not to that of most of those present, from this and other internal antiseptics.

There seems to be no especial ground for fear that we shall interfere seriously with digestion by destruction of bacterial life in the intestinal canal. Bacteria do not seem essential to digestion, for Levin found that the intestinal contents of many Arctic animals, birds and fishes were practically sterile. Although we may accomplish much by use of various bismuth compounds, naphthalin, salicylic acid and other remedies, no generally accepted intestinal antiseptic has been brought forward.

The observations of Bouchard show the diminution of the number of pathogenic bacteria in the feces under the use of naphthol, while Hueppe "found that no cultures could be made from the intestinal contents of a patient who had died from apoplexy supervening during asiatic cholera, and who had been treated by bismuth tribromophenolate exclusively." Progress is being made yearly along these lines.

In the urinary tract we have been more successful in the application of antiseptics to combat bacterial infection. In cystitis, pyelitis and pyelonephritis the results of treatment are now far better than under the former mode of administration of diluents and demulcents. The recognition of the typhoid bacillus in the urine has led to systematic attempts by the use of urotropin

and other antiseptics, to prevent its excretion in the urine. So far as this single feature is concerned I submit that it is better to avoid dissemination of typhoid by destruction of the bacilli after their passage than to attempt their destruction in the body of the sick man. The use of such antiseptics, however, is justifiable for the avoidance of typhoid pyelitis and similar infections. Richardson, Andrews and others have demonstrated the entire disappearance of the typhoid bacilli from the urine under the administration of hexamethylenetetramin. In almost all cases where we have reason to fear a destructive process in the kidneys, or an ascending infection, such treatment is imperative and the results are most gratifying.

A few years ago I was much interested in the study of certain infections of the urinary tract caused by the colon bacillus. Several of these cases progressed to a fatal end, and at postmortem examination exhibited abscess formation in the most various localities. In others to whom urotropin was administered early and in sufficient amount, the urine gradually cleared and recovery resulted. I believe that in these cases we have the most brilliant examples of the influence of antiseptics given internally that have fallen under my observation.

In one of these cases following gonorrhea the colon bacilli in the urine could be noted to decrease with the increase of the dose of urotropin, until, when a total somewhat exceeding the usual maximum dosage was given, the urine remained clear. A decrease of the dosage was followed by the reappearance of the acid, cloudy and ill smelling urine so characteristic of the condition. These facts I had the privilege of verifying by study of the case with Dr. Leonard Freeman.

This patient some four years afterward died of accident, and I had the opportunity of examining the kidneys. In spite of the prolonged general infection of the urinary tract, and most serious systematic infection as well, no traces of the trouble were to be found.

In two patients who had glycosuria the results of the infection were fatal, while in three others recovery took place. I believe that the unusually favorable opportunities for growth of the *Bacillus coli* in the diabetic subjects, with their well known lack of resisting power, turned the scale adversely in the attempt to inhibit the growth of the organism by the exhibition of the urinary antiseptic. There is great ground for hope that we may yet find an intestinal antiseptic as generally useful against infection of the digestive tract as is this drug in urinary infections.

Until bacteriologists give us more positive evidence as to whether acute articular rheumatism is of definite bacterial origin or not, speculation as to the cause of the improvement in these cases from the giving of salicylates is idle. There is not sufficient evidence as yet to establish a presumption that the good effects come from any antiseptic action. As regards the treatment of syphilis by mercury, practically the same conclusion may be offered.

One phase of the supposed etiology and the treatment of pernicious anemia deserves a brief mention. The theory has been advanced that the disease results from the swallowing of pus-producing organisms, especially in those suffering from pyorrhea alveolaris, and that arsenic cures by its antibacterial effect in the digestive tract. Two cases of this disease, which failed to improve under the usual treatment by mouth, I have recently treated by hypodermatic adminstration of cacodylate of soda, with immediate benefit. The very fact that the cases improved so promptly under this treatment suggests that the theory of direct intestinal antiseptic effect of the arsenic can not be sustained.

The effect of creosote and its congeners upon the bacilli of tuberculosis, as shown by repeated examinations of the sputum during the treatment, is generally believed to be a fairly definite one, for Holscher, Axtell and others have shown their gradual decrease in certain cases. Doubtless the results would be more easily noted were cases more generally placed under such treatment before the bacilli became abundant, and especially before mixed infection became a factor. The drugs act by rendering the soil unsuitable as a culture ground, and not directly as germicides.

In the treatment of pulmonary tuberculosis nothing is more discouraging than the sepsis which follows the introduction, almost certain to occur sooner or later, of pus-producing organisms into the pulmonic lesions. In the Denver City and County Hospital, a few years ago, Dr. Henry Sewall gathered together, from his own service and from mine, a large number of consumptives with mixed infection and treated them continuously, with my cooperation, with antistreptococcic serum. No sufficient results were obtained to lead us to continue the treatment.

In the case of a physician recently seen with Dr. Geo. A. Moleen, there were all of the clinical signs and symptoms of pulmonary tuberculosis excepting the absolute absence on repeated examination by different bacteriologists, of the bacillus of Koch, and the presence of innumerable streptococci. The use of streptococcic serum from a well known American firm, after less than a dozen injections, has resulted in the almost complete disappearance of the streptococci. This case might be well termed one of "streptococcic consumption," and the serum was apparently of great benefit to the general condition of the patient through its specific effect upon the streptococcic element.

With Dr. O. M. Shere, in December, 1903, I saw a case resembling this one excepting that a moderate number of tubercle bacilli were found among a horde of streptococci in the sputum. The temperature rose daily to about 102° F., with corresponding pulse rate, and the patient was steadily losing ground. The injection of 10 c.c. daily of antistreptococcic serum was followed in

five days by the almost total disappearance of the streptococci, and improvement in the local signs. In three weeks the temperature became normal, and has remained so. The young man has gained 12½ pounds. The tubercle bacilli have become much fewer in the sputum, taking the average of many slides. Whether the remedy is to receive all the credit for the improvement in these two cases or not, the results must lead us to study this method of combating sespis with the greatest hopefulness.

Dr. S. G. Bonney and others have reported similar improvement in certain cases, although in most instances failure to materially influence the progress of the disease has been reported.

With Dr E. P. Hershey I treated six cases of pulmonary tuberculosis with intravenous injections of dilute formaldehyde solution. They were extremely painful, but produced no visible serious results. Unfortunately they seemed to be without any obvious good results. No exact blood studies of these cases were made. The reported results of similar attempts in the treatment of sepsis by various authors were negative, some of the animals even dying before the controls did. It is obvious that a more effective and less troublesome antiseptic for this use is needed.

I have treated many cases of pneumonia with creosotal, but have seen no such constant and positive effect as to be worthy of record. Yet we have the most positive statements of Thompson and others in favor of the treatment—a sufficient justification of further trial. Practically the same statements hold good as to the use of sodium salicylate in this disease.

A distinct advance has been made in the introduction of colloidal silver and other silver preparations in the treatment of various septic conditions.

In six cases of the mixed infection of advanced tuberculosis, in the Denver City and County Hospital, with the cooperation of Dr. A. Freudenthal, we tried the effect of intravenous injections of collargol. One per cent. of the drug was dissolved in normal salt solution, and 90 to 120 minims were injected every second day. When the injection was made in the morning the evening temperature and pulse were lowered slightly as compared with the intervening days or those previous to the treatment. In a tuberculous empyema, the effect was rather more striking, a remission of 3° F. being noted at times. Still, the effect was so slight, and so devoid of apparent good effect upon the general condition that we did not continue the practice. It is possible that in the earlier stages of this mixed infection more positive effects might have been noted.

I believe that we may await with reasonable confidence the advent of some such internal antiseptic as shall measurably compare in effect in septicemia with that of the silver salts in gonorrheal ophthalmia. The weight of evidence is certainly in favor of the continued use of Credé's ointment in those cases of cellulitis, phlebitis and other inflammations caused by pus-forming organisms. Sufficiently favorable reports have been published to lead us to use such a line of treatment at least until something better is advanced.

Hume, basing his work upon the well-known leucocytosis of infection, and the increase in whites known to follow the intravenous injection of nitrate of silver, has sought to combat general infection by this means. He injected 500 c.c. of water containing .05 gram of silver nitrate. In ten cases of pyogenic infection there was but one death. No local results were observed excepting two cases of mild phlebitis. The theory is advanced that the treatment may do good by the destruction of red cells, and the setting free of antibodies. Inasmuch as several cases recovered in which the outlook seemed entirely desperate we should have no hesitation in commending a continuation of work along this line. In ulcerative endocarditis Robinson[1] states that "the treatment of the disease has now definitely in view the killing of the germs." He favors the early use of antistreptococcic serum perferably by the intravenous route, "because streptococci are undoubtedly among the organisms which appear frequently infiltrated, as it were, in the cardiac valves, at the autopsy in these cases. Powell reports three cases successfully treated in this way.

Sansom has used sulphocarbolate of soda in half dram doses "with such good effects that one patient was enabled to leave the hospital and remain away ten months before a fresh attack occurred." The diagnosis was confirmed after an attack which failed to yield to treatment, micrococci being found upon the valves.

Klotz narrates a case resulting successfully, in which colloidal silver was used hypodermically. After two injections there were rigors and no improvement; but after the third there was rapid decrease of fever and ultimate recovery.

Park and Payne recommended the use of salt solution intravenously as being less dangerous than formalin injections, and generally useful. It is possible, as pointed out by Netter, that the action of germicides in the blood is not due to their antiseptic effect, but to catalytic action. Possibly we are striving too much for mere germicidal power in our efforts to combat disease by intravenous medication.

Babcock believes that we should attempt to neutralize the toxins found in the intestinal tract in ulcerative endocarditis, believing that these, unless properly neutralized, aggravate the original disease. Robinson states that "the best and least harmful (antiseptics) which I have tried

1 I have drawn freely from Robinson's excellent article in the April number of the American Journal of the Medical Sciences.

are small, repeated doses of beechwood creosote, the salts of bismuth, and wood charcoal."

This review of some of the advances of the past decade in internal antisepsis leads us to look confidently for longer strides forward in the near future.

MEDICAL PROGRESS.

SURGERY.

Lingual Goiter.—Variations from the normal are most frequently seen upon or in the neighborhood of the median line of the body. HENRY R. STORRS (*Annals of Surgery*, Sept., 1904) presents an exhaustive article on the subject in which is included citation of all known cases. It is stated by Gruber that accessory thyroids are overwhelmingly more frequent in men than in women and yet a study of the cases in which they have developed into tumors, to which the term "lingual goiter" is given, shows that although the abnormality is so frequent in men and so rare in women, it is the women who almost always suffer from hypertrophy of the growth. There is no known explanation for this, but the fact that sex appears to be a predominating influence in this small and rare type of goiter, may be of great use ultimately in ferreting out the etiology of the general disorder known as goiter. Another important characteristic of the growth is its sudden development. It is usually well known that the patient has an accessory thyroid, but very frequently it gives rise to no trouble whatsoever. Suddenly, without any apparent reason, the growth leaps into great vascular activity and develops to such an extent as to require immediate removal. The pathological anatomy of the tumors is as follows: They are situated upon the dorsum of the tongue just behind and below the foramen cecum, but sometimes, as in Bernay's case, enclosing it. They are invariably round and their volume varies from the size of a cherry to that of a man's fist. Encapsulation is generally distinct and there is usually a freedom from inflammatory reaction in the neighborhood of the growth. It is smooth and shining and darker than the surrounding mucous membrane on account of the extraordinary vascularity of the growth. The vessels are found not only upon the surface, but they penetrate through and through the tissue and are certain to cause troublesome hemorrhage at the time of operation. This vascularity is one of the most important differential points in distinguishing the growth from dermoid. The tumor may or may not be movable, for this factor depends entirely upon the degree of involvement of the muscles of the tongue. The subjective symptoms are usually quite characteristic. They are almost invariably of such nature as to acquaint the patient with the existence of the growth without causing her sufficient annoyance to call for its removal. Then, of a sudden, voice changes occur and prolonged fits of coughing accompanied by deglutition spasms. Even though the tumor may be of large size, a laryngoscope may be necessary for differential diagnosis. The most important point to be determined is whether or not the growth is malignant. Sarcoma is usually even more rapid in growth and is painful. Carcinoma is not alone painful, but is almost always ulcerated. Lipoma is golden yellow. Gumma grows in a different manner. It ulcerates and is often multiple. Hypertrophy of the lingual is not very frequent. It is superficial only and consists of whitish yellow, hard concretions which distend the crypts of the lymph follicles and project from the surface of the tongue. Dermoid more closely resemble the growth than anything else, but they are characteristic by an absence of the latent period, which is almost always recognized in lingual goiter. The treament must be surgical, for medicines do no good. Puncture, as in the case of ordinary goiter is dangerous. The galvanocautery has been used, but its use has been more or less given up in favor of enucleation. This is preferably performed through the mouth, steady traction on the tongue controlling hemorrhage. The prognosis is good.

Treatment of Rectal Prolapse by Paraffin Injection.—Although a prominent practitioner of New York was recently sued by a woman for not having properly improved her looks by paraffin injections, the technic has undoubtedly achieved a very definite and assured position. Fortunately, in the case cited, the jury decided that the physician had improved her good looks, at least to the extent of the bill, and the case was dismissed. A. H. BURGESS (*Lancet*, September 10, 1904) records the history of 18 cases or rectal prolapse treated by injection. The paraffin which he has used, has a melting point of 111° F. The technic employed is as follows: The patient is anesthetized and the prolapse drawn out as far as possible. Around the margin of the prolapse, which are raised by reaction on three forceps placed at the apices of a triangle, the injection is begun. The needle is inserted into the middle of each side of the triangle, two or three c.c. being introduced. As the mass solidifies, it pushes the rectum inward and encroaches upon the lumen of the bowels. A new triangle is then made and the operation repeated until finally the entire prolapse is invaginated. This process is repeated until the anus is reached. A good-sized pad is placed across the anus and stitched directly to the buttox by a heavy silkworm-gut suture. This is removed in twenty-four hours. No after-treatment is required. The patient is kept in bed for four or five days and the bowels are allowed to act spontaneously. The age of the individuals varied from three to forty-eight years, and the size of the prolapse from 1½ to five inches in length. In each case, the bowel descended with every movement and remained down until it was replaced. Although several accidents have been reported by those who have done this work in this region, the author states that he has never had the slightest trouble. As a precaution against injecting it into a vein, he first uses a blunt needle; second, he takes particular pains to see that the point can be moved freely within the submucous tissue, and third, closes the large veins by raising a fold of the mucous membrane by artery forceps as described. The advantages of the method are (1) its rapidity; (2) its low mortality rate; (3) the absence of prolonged after treatment; (4) the mere fact that should it fail, the patient is probably no worse off than before it was attempted. Paget has demonstrated that paraffins melting at about 136° F. become incapsulated with fibrous tissue and remain unchanged. Morton has demonstrated that a paraffin melting at 109° F., if injected, will at the end of four months, be replaced by embryonic tissue. One of the author's cases, however, upon whom he had the opportunity to make an autopsy 4½ months after operation, showed that a simple encapsulation process only had gone on.

The Medical News.

A WEEKLY JOURNAL

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"THE STREETS OF NEW YORK."

If cleanliness is next to godliness the streets of New York are in as solitary and unregenerate a state as even our lax municipal law allows. Why this should be at the present time it is hard to say, unless it is that this is the darkest hour which tradition teaches is apt to come before the dawn of a general election.

The white-winged street-cleaner, like the village tenor, is unquestionably doing the best that he can with his little perambulating go-cart, but this, with its patent reversible French-coffee-pot attachment, which holds a pint and boils over with every breath of air, has the unhappy habit of scattering its contents to the four winds of heaven, and "then the dust returning to the earth" makes such a mess that a cleanly crossing is impossible and every dragging-skirted woman is a rake at heart. Then, too, his coadjutor and side-partner, the pert and chirpy English sparrow, seems to be missing from his accustomed haunts. Either he has folded his wings and silently stolen away or he has been driven from his happy hunting grounds by the introduction of the all-conquering and starvation-producing automobile. At all events his self-sufficient little person is no longer seen hopping about in vast numbers on our thoroughfares, and his merry tit-willow note which, like that of the turtle, was loud in the land, seems now (as some of our imported Aldermen would express it) to have become the sound of the voice that is still.

That New York is not, and never can be, a second edition of "Spotless Town" goes without the saying, but its avenues need not so closely resemble that winter resort which is proverbially paved with good intentions, and certainly the admixture of some little drops of water with the prevailing little grains of sand would make it a much more beauteous land than the present Street Commissioners have apparently any idea of allowing it to become. Zion, we have been creditably informed, is paved with gold, but what the sub-strata of our streets really is cannot be told without the touchstone of the infrequent broom, though, judging from the occasional specimen bricks that have been exported to the confiding denizens of the rural districts, it must be something that does not even glitter. All this is, in itself, bad enough, but when the refuse of fruit stands, with an occasional dead and festering cat, is added to the unwashed tin cans that have been thrown from the equally unwashed tenement windows, the result is a "dump" that even a self-respecting goat would not deign to consider.

If this is a crime in the general streets, it is worse and becomes a blunder on the thoroughfares traversed by the electric trams.

Our lawgivers, when they prohibited expectoration on the cars, only succeeded, from a sanitary point of view, in robbing Peter to pay Paul, for the expectoration is now directed at the hard stone pavement, and as the outside seat is usually occupied by some specimen of the "end-seat-hog," who follows the biblical example and spits upon the ground, nothing has been gained. The streets are seldom washed or swept, save by rain or wind, and as the sputa cannot sink into the soil, it remains to be dried by the action of the sun, and is then blown into the faces of the passengers in an impalpable but most dangerous dust.

There was a time when the belated homegoers in the upper sections of the city found themselves surrounded in the wee small hours by groups of stalwart men whose clothes with horizontal stripes and close-cropped hair gave evidence that they were washing out their sins in expiation for the city's good. But now it seems that even the wicked have ceased from troubling and that the contractors' weary horses are at rest.

How long this period of the great unwashed will continue is a much more difficult question to answer than what will happen if some change does not take place. Given a little less rain and a trifle more intense heat, and the lower parts of the city will become unendurable. Discomfort in summer weather is hard to bear, but disease is worse, and in the crowded tenement districts the mortality among the young children, whose playground is in the gutter, will be enormous. We have all heard of the Ben-Butlerization of New Orleans in the bellum days, and there have been later rumors of what Wood accomplished in the cleaning up of Havana, but charity begins at home, and surely there is someone whose business it is, or who will make it his business, to grapple with this Augean task in our own slums.

The reasons lately assigned for this condition of the streets by one of the morning papers is hardly a valid excuse. It is true that the population of New York is now enormous and that the area occupied by the city is a vast one, but if this is divided into sections and each one thoroughly policed by men detailed for that purpose, it becomes simply a question of the multiplication of centers. As each of these subdivisions is cared for by its own set of cleaners, it is practically as easy to keep a thousand districts healthy and clean as it is one. When a section is overcrowded, and consequently in a more insanitary condition, the number of men employed can be increased, so that it is really, as are most matters of municipal reform, simply a question of dollars and cents.

As to the resident portion of the city, particularly in the upper parts, it is true that, as a rule, it is free from the refuse of garbage, the remains of dead animals, and the empty receptacles for canned foods. But even here the dirt and dust have accumulated into mounds which are scattered hither and yonder by every passing thunder-storm. It may be, however, as there is method in most forms of civic madness, that our City Fathers have allowed the dust to creep into little heaps as a protection to lovely woman with her necessarily uplifted skirts in these semi-autumn days of sudden gusts; even as the surprise-intending Legions of Rome were hidden by the blinding dust of their accompanying chariot wheels.

"The devil sent the whirling gust,
To blow the skirts awry;
But the good Lord sent the blinding dust,
To blow in the bad man's eye."

PIROPLASMOSIS.

Since each of the presidential candidates has finally agreed upon one point, namely that the Filipinos shall be given their independence "when they are qualified to have it," a long period of tropical colonization seems to be inevitably before us. That means the care of every variety of equatorial disease.

The rate at which the number of animal parasites, recognized as infesting the human body, has increased in the last few years, has been little short of astounding. Aside from the confessedly entertaining and graphic accounts of the subtleties of the "lazy bug," there is no parasite with more interesting characteristics than that which has recently been recognized and appropriately named Donovan's Piroplasm.

Coincident with Laveran and Mesnil, Donovan discovered this parasite in a patient in his wards at the General Hospital, Madras, India. In the *Lancet* of September 10, 1904, he gives a most interesting account of the history of his discoveries and cites numerous clinical observations which are of very great interest. During the last year he has had under observation no less than seventy-two patients, all suffering from this disease, a fact which shows how prevalent it must be throughout the tropics.

Of the identity of the piroplasma infection with the well-known tropical disease, Kala-azar, there can be no doubt. Edema of the feet occurs in about fifty per cent. of the cases. Bronchitis is about as frequently present. The skin almost always becomes covered with small ulcers which look very much like scabies, and it further resembles this disease, in that the itching is intense. Occasionally these skin lesions are not unlike Delhi boils. Pigmentation of the skin is very common. It may also occur in the eyes and mouth.

The most characteristic feature, however, of the clinical manifestations of the disease is revealed by physical examination. The spleen is almost always enormously enlarged, some of Donovan's patients having had this organ so hypertrophied as to weigh 80 ounces. This is a tremendous weight when one considers that some of the patients dying from this disease become so emaciated as to weigh, even though adults, only from 52 to 80 pounds.

The temperature is characterized by great irregularity, by being unaffected by quinine, arsenic, or any other drug, and by lasting from

two to six months. In the beginning it is decidedly intermittent, varying from 97° to 104° F. Occasionally the intermittance occurs with considerable regularity, morning and evening. The temperature occasionally sinks to 97° F. and remains there for a week or ten days, or even longer. Most noteworthy is it that the temperature is positively a determining factor in affecting the size of the spleen, the organ varying directly with it. During an exacerbation in many cases, the spleen has been observed to be far below the umbilicus, while within a week, should the temperature remain normal, the spleen will actually retract beneath the ribs. This diminution, however, in all cases is temporary.

It is of great interest to notice that although the liver is not so invariably affected in size, the maximum variations in temperature in about one-third of the cases produced an increase of liver dulness amounting to more than an inch beneath the costal margin.

Since the organism is very rarely found in the peripheral blood, and since even, if so found, it is always present in an entirely different shape from that assumed by the parasite when resident in the spleen, it is considered very necessary by Donovan to puncture the spleen in all suspicious cases. He very frankly records the death of one of his 110 cases of splenic puncture, post-mortem examination having shown it to be caused by a rapid intra-abdominal hemorrhage directly from the splenic wound. This fatality occurred in his twenty-second patient, and since then he has taken the precaution of administering large doses of calcium chloride and of keeping the patients quiet in bed for twenty-four hours after the operation.

This communication from the distinguished discoverer of the cause of Kala-azar is of profound interest to us even though, as suggested, we may not hold the Philippines indefinitely. The immediate and pressing interest in the matter would seem to be that Donovan in proving that the parasite is localized very strictly to the splenic circulation, has pointed out the only logical method of cure, viz., splenectomy. The pathological findings in this disease correspond, so far as the surgical indications go, very closely to those present in the cases of chronic malaria, which have been cured by this operation. The author himself does not advocate surgical treatment, but he very distinctly states that "quinine, arsenic, the salicylates, carbolic, creosote, iodine, etc., have all been used without producing the slightest effect."

It may not be premature to hope that Kala-azar, the etiology of which has been so cleverly demonstrated, will happily prove to be among those diseases which can be permanently cured by radical operation.

ECHOES AND NEWS.

NEW YORK.

Gift to Academy of Medicine.—By the will of the late Dr. Alfred W. Warden, of Weehawken, N. J., the sum of $1,000 is bequeathed to the New York Academy of Medicine.

Retirement of Dr. A. E. Macdonald.—Dr. A. E. Macdonald retired from the superintendency of the Manhattan State Hospital, East, on October 1, 1904, after which date and until further notice all communications relating to the hospital should be addressed to Dr. J. T. W. Rowe, Acting Superintendent. Dr. Macdonald's personal address will be Columbia Court, New York City.

New York Academy of Medicine.—Sections on Otology and on Pediatrics will meet next Thursday, October 13. In the Section on Otology Dr. W. H. Haskin will present a case of subdural abscess with necrosis of auditory canal. Dr. H. A. Alderton will read a paper on Some Points Respecting the Surgical Anatomy of the Facial Nerve. In the Pediatric Section, Dr. W. P. Spratling will read a paper on the Relation of Dentition to Epilepsy, and a discussion will be held on the Sequelæ of Cerebrospinal Meningitis. The following new members have been recommended for election to fellowship: John Cameron Anderson, Arthur A. Boyer, R. Bishop Canfield, Karl Connel, Colman Ward Cutler, Jeremiah Sweetser Ferguson, Herman C. Frauenthal, Lewis F. Frissell, James Morley Hitzrot, Burton J. Lee, Ralph Waldo Lobenstine, Frank Sherman Meara, Charles B. J. Mittelstaedt, Henry W. Mooney, Mortimer A. Moses, Samuel B. Olliphant, George Willis Robinson, Frederick J. Schoenenberger, Montgomery H. Sicard. For Associate fellowship: Frederick Stewart Baron, Henry R. Linville, George A. Soper, Edwin Henry Hall.

College of Physicians and Surgeons Reopens.—The formal opening of this institution for the coming academic year took place on Thursday afternoon, August 29. The chaplain of Columbia University read an appropriate selection from the Old Testament and followed it by a brief prayer. President Butler then arose and in a very fitting speech welcomed the students, both old and new, and congratulated them upon their larger responsibilities and greater possibilities for active and earnest endeavor. Speaking of the overcrowding in the medical profession, Dr. Butler cited France and Germany as concrete examples, but said that he felt sure this is not the case in the United States, at least not in the country districts, for there is many a town and hamlet without a medical representative, which is forced to send miles away in cases of urgent need.

Following this, the President introduced Professor John G. Curtis, Acting Dean of the Medical School, whose subject was: "Our Medical Teaching Considered in the Light of Ancient Error."

The ourden of Professor Curtis's essay was a historical review of medicine from the earliest times. He took up several of the old writers on medical subjects, translating at length from the writings of the Greeks and showing how keen was their conception of many things which we now acknowledge as facts. He emphasized the necessity of thorough courses in all subjects in which laboratory work can be given, and recommended his hearers to follow this method up as fully as possible after graduation. About 100 students are enrolled for the first year class, most of whom have received college diplomas in arts or science. Last year the entering class numbered 110, a falling off which is explained by the increased requirements for admission and by an additional tuition fee of fifty dollars. The graduating class has nearly 190 members, and is larger than that of last year.

Site for Skene Monument.—The Municipal Art Commission has approved of the designs for the $5,000 monument to be erected to the memory of the late Dr. Alexander J. C. Skene, the noted gynecologist of Brooklyn, at the north end of Prospect Park Circle, opposite the Soldiers and Sailors' Arch. The monument will be in the form of a white marble shaft thirteen feet high and six or eight feet wide, with a bronze bust of Dr. Skene.

Nassau County Hospital.—The net receipts of the fair given by Mrs. Clarence Mackay, at her home at Harbor Hill, on Saturday last, for the benefit of the Nassau County Hospital, were announced at the hospital to-day to be $10,750. An arrangement had previously been made between Mrs. Mackay and the hospital regarding the disposition of the proceeds of the fair. In accordance with this agreement Mrs. Mackay will give to the institution $2,000 a year for three years to assist in meeting the running expenses, and $4,150 will be set aside for the endowment fund. The balance, $600, will be used for improving the hospital grounds.

Typhoid in Albany.—There are a number of cases of typhoid fever in Albany, and the State Board of Health has issued an opinion on the cause. The Board ascribes the epidemic to the unsanitary conditions at summer hotels and boarding houses, and recommends a systematic investigation of such places for the purpose of obtaining reliable information to be kept on file at its office for general inspection, and also for the purpose of giving summer resort proprietors expert advice as to changes necessary to place their premises in safe conditions. The Board says: "This epidemic and many others investigated in the past have shown that hundreds of persons are every summer infected with typhoid fever at country resorts and return to the city before the disease manifests itself, thus making the number of cases reported to the city Boards of Health unusually large in the early fall. The same circumstances doubtless surround the increase of typhoid fever in cities in the spring, when many persons return from resorts in the South. It can hardly be expected that the proprietors of these resorts will be men of knowledge and skill in sanitary matters. Doubtless ninety-five per cent of all resorts are established without giving the plans of the sanitary arrangements any proper expert consideration. The majority of owners of such places would be more than willing to correct any existing defects if they could be told by a proper authority, not interested in obtaining contracts, just what was needed. The protection of the public making their accustomed use of these resorts requires that their representatives in the State government provide for the badly needed extension of the public health service to the inspection and supervision of the sanitary arrangements of public resorts. The cost of such a service would not be greater than the loss to the people through even one of the epidemics of typhoid fever at present quite frequntly occurring in various parts of the State."

PHILADELPHIA.

University of Pennsylvania.—At the opening of the University on September 30, the students of the Medical Department presented Provost Harrison with a silver loving cup. The inscription states that the gift is in appreciation of earnest efforts in behalf of the medical department. A gift of $100,000 to the Veterinary Department was announced, the donor withholding his name. In pursuance of efforts to stop hazing, each member of the Sophomore class of the college received a letter from the Dean stating that participation in hazing will be punished.

Jefferson Medical College.—Because of the large increase in the faculty of this institution, the following disposition has been made of the studies in the Senior year: Four major branches are recognized—Therapeutics, Obstetrics, Surgery, and Practice of Medicine. The remainder are placed in three groups: (a) Gynecology, Neurology, and Genito-urinary Surgery; (b) Orthopedic Surgery, Dermatology, and Pediatrics; (c) Ophthalmology, Laryngology, and Otology. Each of these groups has the value of one major branch. Examination in group a will be in the spring, with the majors, in groups b and c during the first week in March.

Coroner System Defended.—During the recent meeting at Scranton, of the State Convention of County Commissioners, the question of the abolition of the office of Coroner in Pennsylvania was seriously debated. In regard to the matter, Coroner Dugan, of Philadelphia, says he is sure the office is a permanent fixture in this State. "It would require an amendment to the constitution to abolish the office and, considering the great assistance it is to the District Attorney, he doubts very much if its abolition will ever be effected. Within the past six months the work of this office has resulted in the breaking up of the notorious malpractice syndicate and driving from the city of persons engaged in inhuman infant traffic. Several mysterious murders have also been completely brought to light, all of which goes to prove what an important adjunct it is to municipal government. The office of coroner is an ancient and important institution. Its name may be changed, but its duties and obligations will ever remain the same."

State Board and New York Examinations.—The Medical Council of Pennsylvania, at the June meeting, adopted the following resolution: "*Resolved*, that each examining board be authorized to accept, if they see proper, the grades of graduates in medicine obtained in examinations before the State Board of New York on the branches of the first two years of the medical course; that candidates submit their grades to their respective examiners who shall pass judgment upon the same; and that they shall be required to deposit the usual examination fee of $25 with the understanding that they get a rebate of $10 in case their grades from New York are accepted, and that this rule remain in force for the Pennsyl-

vania examiners until the close of the December examination in 1905."

Chestnut Hill Hospital Opened.—Many residents of Chestnut Hill and Mount Airy attended the opening of the new hospital at the former place October 3. The institution comprises two three-story buildings used formerly as dwellings. Miss Rena J. Ward is to act as superintendent.

CHICAGO.

Opening Exercises.—The opening exercises of the Chicago College of Physicians and Surgeons (Medical Department of the University of Illinois) were held September 27. Dr. C. C. O'Byrne delivered an address on behalf of the Faculty.

Commencement Exercises of Illinois Medical College.—The exercises of this college were held September 29 at Handel Hall. The principal address was delivered by Judge Holdom. Degrees were conferred upon forty-seven doctors and druggists by Dr. H. H. Brown, ex-President of the College. A banquet was held in the evening at the Auditorium Hotel. Dr. S. S. Bishop acted as toastmaster, and after-dinner speeches were made by Judge John Barton Payne, Judge Holdom, Prof. C. W. French, of the Hyde Park High School, Rev. J. L. Jackson, and Drs. H. H. Brown, Wm. Rittenhouse, and B. B. Eads.

American College of Medicine and Surgery.—The opening exercises of this college were recently held. Addresses were delivered by Prof. Gammage and Dr. Truman W. Brophy. Fifty-one freshmen matriculated. The college has about 250 students. This is the fourth annual opening.

Donations for Institutions.—The will of Mrs. Elizabeth Green Kelley leaves half of a $600,000 estate to charitable and educational institutions. To the University of Chicago, it is said, $100,000 was given. The Home for Incurables and the Chicago Orphan Asylum are to receive $60,000 each, the Presbyterian Hospital $25,000, and the Public Library $30,000. St. Luke's Hospital is also remembered.

Dr. Northrup in Chicago.—Dr. W. P. Northrup, of New York, addressed the Chicago Medical Society and the Pediatric Society, in joint session, Wednesday evening, September 28. Subject: "Pneumonia in infant's early diagnosis and treatment apart from drugs."

CANADA.

Personals.—Dr. J. V. Anglin, assistant superintendent at the Protestant Hospital for the Insane, at Verdun, Quebec, has been appointed medical superintendent of the Provincial Hospital for Nervous Diseases at St. John, N. B. Dr. Anglin is a graduate of Queen's University, and has devoted all his professional life to the care of those afflicted with insanity and allied diseases.

Dr. Squire Sprigge, editor of the *Lancet*, is visiting Mr. Justice Moss, of Toronto.

Dr. S. J. Tunstall, Vancouver, B. C., President of the Canadian Medical Association, has been visiting in Montreal, Toronto, Boston and New York. At the latter place he saw Mr. Mayo Robson and Dr. MacGillivray, of Edinburgh, embark for England.

The following Toronto practitioners have been placed in nomination for representatives on the Senate of Toronto University from the Medical Faculty: Dr. J. A. Temple, Mr. I. H. Cameron, Dr. Geo. A. Bingham, Dr. Adam H. Wright and Dr. W. H. B. Aikins.

Mr. Irving H. Cameron, Professor J. J. McKenzie and Dr. G. H. Burnham have returned to Toronto from England. They formed a deputation which waited on the Council of the British Medical Association to invite that body to convene in Toronto in 1906. The Council recommended that the invitation be accepted, so Toronto is preparing to have the British Medical Association in that year.

Dr. R. W. Bruce Smith, of Brockville, Ont., assistant physician at the asylum for the insane there, has been appointed Inspector of Prisons and Public Charities in Ontario, in succession to Dr. T. F. Chamberlain, who has resigned owing to ill health. Dr. Smith will be succeeded by Dr. J. C. Mitchell, of the Toronto Asylum, who in turn will have his place filled by the present relieving officer, Dr. Harris.

Dr. J. A. Leduc, who has been house physician at the Notre Dame Hospital, Montreal, has left for Boston, where he will spend a year in the Civic Hospital of that city. On his return to Montreal he will take up work in connection with the proposed new contagious diseases hospital to be erected in connection with the Notre Dame institution.

Dr. J. B. McConnell, Montreal, vice-dean of the Medical Faculty of Bishop's College University, has been elected second vice-president of the College of Physicians and Surgeons of the Province of Quebec.

Dr. Thompson, a member of the British House of Commons, at present on a visit to America to inspect the medical institutions on this side of the Atlantic, has been visiting the hospitals and medical colleges of Montreal during the past week, and expresses himself as being delighted and pleased with the perfect system of regularity in operation in those institutions.

Sir Felix Semon, one of the distinguished throat specialists of England, is on a visit to Montreal and is the guest of Dr. H. S. Birkett, of that city. Sir Felix enjoys a reputation as a clever stalker of deer in Scotland, and has gone on a moose hunting expedition into the heart of New Brunswick.

Quebec College of Physicians and Surgeons.—The elections for the College of Physicians and Surgeons of Quebec were held at Laval University in the City of Quebec, on September 28, a very large attendance of medical men being present from different parts of the province. Dr. E. P. Lachapelle, of Montreal, was re-elected president; Dr. D. Brochu, of Quebec, was elected first vice-president, and Dr. J. B. McConnell, of Montreal, was elected second vice-president. Dr. A. R. Marsolais, of Montreal, was elected registrar, with Dr. A. Jobin, of Quebec, treasurer, and Dr. P. O. Faucher, of Quebec, as secretary.

Magnificent Gift to Toronto General Hospital.—The Board of Trustees of the Toronto General Hospital have decided to accept the most generous offer of Mr. Cawthra Mulock, of Toronto, to build, equip and furnish at an expense of $100,000 a separate building or wing for the purpose of the outpatient department of this institution. There is, as the wealthy donor states in his leter to the chairman of the Board, the most urgent need at the present time for a properly equipped outpatient department in conection with this hospital, which will at the same time provide free service for Toronto's poor, and also provide satisfactory clinical teaching for the six or seven hundred medical students at the University of Toronto. It has not as yet been decided whether the new building should be erected alongside of the present hospital building or located near the new

medical building of the University. The latter would probably be preferable, as it would be convenient for patients, while at the same time it would offer better advantages to the medical students.

Trinity Confers Her Last Degrees.—The last convocation of Trinity University for conferring medical, arts and other degrees was held during the past week. The Chancellor of the University, Mr. Christopher Robinson, K. C., presided, and expressed regret that a function which had been carried on for the past fifty years would now cease, owing to federation with the University of Toronto.

Ontario's Health for the Month of August.—The total deaths from all causes in Ontario during the month of August numbered 2,024, which gives a death rate per 1,000 of 12.4 per cent. Regarding infectious diseases the cases and deaths show an increase of 43.1 per cent. for the former and an increase of 20.5 per cent. for the latter over the corresponding months of last year, which increase is due largely to typhoid and diphtheria. There was plenty of typhoid fever throughout the province during the month, but those places particularly affected were London, St. Thomas and North Bay. There were eight cases of smallpox with no deaths, 132 cases of scarlet fever with nine deaths, 172 of diphtheria with 25 deaths, three of measles with one death, 19 of whooping cough with 15 deaths, 293 cases of typhoid with 50 deaths and 196 cases of tuberculosis with 188 deaths.

GENERAL.

Boston Bequests.—Public bequests aggregating over $1,000,000, the largest being a gift of $250,000 to the city of New Bedford, are contained in the will of Mrs. Sarah Potter, of Boston, which was filed for probate yesterday afternoon.. To the Boston Medical Library is bequeathed $150,000; to the Kindergarten for the Blind, at Jamaica Plain, $100,000 and $50,000 to each of the following: Harvard University, Boston Home for Incurables, Hospital Cottages for Children, at Baldwinsville, Mass.; Free Hospital for Women at Brookline, and the Massachusetts College of Pharmacy.

Japanese Sanitary Work Praised.—Among the passengers arriving on the steamship Mongolia, at San Francisco, from the Orient, was Dr. Louis L. Seaman, who has served as a surgeon in the United States Army, and who has been studying Japanese methods of surgery in the campaign of that army against the Russians. In his opinion, Japan is far ahead of all other nations of the world in the organization of her sanitary branch of the army, and has been the first to anticipate and take adequate measures against disease, recognizing the fact that the greater number of deaths in war are caused, not by bullets, but by sickness.

Genius and Eccentricity.—The following story recently told by Mrs. Tweedie concerning Ibsen and his methods will be enjoyed by those who hunt for eccentricities in people of genius. Speaking of a recent visit made by her to Ibsen's home, she says: "On the table beside the inkstand was a small tray. Its contents were extraordinary—some little wooden carved Swiss bears, a diminutive black devil, small cats, dogs, and rabbits made of copper, one of which was playing a violin.

"'What are those funny little things?' I ventured to ask.

"'I never write a single line of any of my dramas unles that tray and its occupants are before me on the table. I could not write without them. It may seem strange—perhaps it is—but I cannot write without them,' he repeated. 'Why I use them is my own secret,' and he laughed quietly."

English Lunacy Reports.—The last annual report of the English lunacy commissioners is a portentous document, filling 500 pages of a blue book recently issued. It makes rather laborious reading, but contains some interesting and disquieting facts. Among them are the following: On January 1, 1904, there were 117,199 persons certified as insane in England and Wales, or 3,235 in excess of the number reported on January 1, 1903. In the ten years ending December 31, 1903, the average annual increase in the number of insane was 2,513 and the increase in 1903 exceeded that average by 821. On January 1, 1904, the total number of officially reported insane to the estimated population of England and Wales was in the proportion of 1 to 288; or, in other words, the ratio of the insane per 10,000 of population was 34.71 while last year on the same day the ratio was 34.14. The commissioners point out that in dealing with the gross figures alone there has been a rise in the total numbers from 113,964 to 117,199, *i.e.*, an increase of 2.8 per cent., but the increase of the one ratio over the other was 1.7 per cent., a rate which represents more accurately the actual growth of insanity, since it takes into account the growth in population. The total increase in this ratio for the past ten years was 13.1 per cent., whereas the increase in the numbers of the insane during the same period was 27.3 per cent. In 1894 the proportion of insane to total population was as 1 to 327; in 1904 it is as 1 to 288, and while the insane have increased from 92,000 to 117,000 the general population has grown from about 30,000,000 to 33,750,000. Alcoholic intemperance figures prominently among the physical causes for insanity.

Are We Really Civilized.—"About 2250 B.C.," writes Dr. P. M. Jones, in a recent editorial anent the progressiveness of American civilization, "Hammurabi, King of Babylonia, established certain laws which he embodied in a code, inscribed upon stone stelæ, and set up in the principal cities of his domain. We are rather inclined to look upon medical legislation as somewhat modern; that is because we do not know any better. In Hammurabi's time, medicine was specialized; surgery was a distinct branch of the science; quacks and pretenders were known and legislated against. From advance sheets of a translation of these laws by Professor Harper, President of the University of Chicago, we read: "If a physician operates on a man (*please note that the physician did not 'operate a case' in Hammurabi's time!*) for a severe wound with a bronze lancet and saves the man's life, or, if he opens an abscess (in the eye) of a man with a bronze lancet, and saves that man's eye, he shall receive ten shekels of silver (as his fee)." But, under the same circumstances, if he causes the man's death, or destroys the man's eye, "they shall cut off his fingers." That would tend to discourage unskilled operators and experimental operations. In 1508 the Royal College of Surgeons was authorized by charter to examine those who would practise medicine and physic, and to issue license to those who were found qualified. This would not have been done had it not been found necessary, nor would Hammurabi, 4154 years ago, have had need to discourage quacks, had they not existed. Yet, in this year of grace, 1904, there come those who practise medicine and physic, and they

stand before the highest court in the State, in the persons of their attorneys, and say they prefer to have no law governing the practise of medicine. This is indeed a progressive age, when educated men will strive to put the commonwealth back of the time of Babylonia; to make us lose what has been gained in 4,154 years!

Cost of Tuberculosis.—In a recent paper on the cost of tuberculosis to the State of Illinois (*Illinois Medical Journal*, September, 1904), Dr. H. M. Thomas says that consumption costs the State an annual loss of thousands of lives. Many of these lives can be saved if placed in hospitals or sanitoria. In view of the excessive mortality from this disease and in order that this may be markedly diminished, it is a decided economic advantage for the State to maintain hospitals for its consumptive poor. Some sanatoria claim 70 per cent. of cases cured when the patients are admitted to treatment in the earlier stages. This estimate is probably correct. Incipient tuberculosis is one of the diseases most easily cured. It is fair to estimate that under proper treatment in sanatoria 50 to 75 per cent. of the consumptive patients in the earlier stages would be cured. With 7,026 deaths from tuberculosis in Illinois for the year 1903, if we can save through the maintenance of sanatoria by the State 50 per cent. instead of 7,026 deaths there would be but 3,513 deaths. Estimating the annual economic loss to the State from tuberculosis at $36,000,000, or at the rate of at least $100,000 a day, sanatoria would save to the State annually at least $18,000,000. Is it not therefore wise for the State through the erection of sanatoria to annually effect a saving of this vast sum? Viewed strictly from a standpoint of the annual economic loss, and considered wholly from its financial aspect, and laying aside all huumanitarian and philanthropic considerations, our State is justified in proceeding to assume the care of its consumptive poor. It is not to be expected that sanatoria will abolish consumption. The spread of contagious diseases through quarantine is not wholly prevented, and yet we continue to quarantine. The establishment of sanatoria would not only be of great economic value to the State, but would, through their sanitary environments as well as educational benefit, be of great and lasting value to our State. Illinois, the State of vast industrial activity, tremendous agricultural resources and comprehensive educational institutions; the home of great statesmen, scientists and philanthropists, must be freed from the blight and devastation of tuberculosis. Science has clearly pointed the way for the accomplishment of this end. Let us not be blind to or negligent of our duty. Let us each and all do our share that in the end tuberculosis may forever be banished from our midst.

OBITUARY.

Dr. David D. Wickham, the oldest practising physician in Orange county, N. Y., died at his home in Port Jervis, Saturday night, of acute gastritis, at the age of seventy-four years. He was born in Wantage township, Sussex county. After practising medicine fifteen years in Sussex county he went to Port Jervis in 1872 and accumulated a large fortune in practise. He gave the colored people of Port Jervis a handsome church building and to Drew Methodist Church of that place $5,000, this sum being the amount of a mortgage held by him, to be canceled on the death of his wife.

Dr. Merric Bemis, for fifteen years prior to 1872 Superintendent of the Worcester (Mass.) Lunatic Hospital, and widely known as an expert on insanity, died suddenly last Monday, of Bright's disease, aged eighty-four years. Of late years Dr. Bemis, assisted by his son, Dr. John M. Bemis, had managed a large private asylum for the insane.

Dr. Phineas J. Horwitz, of 1919 Walnut Street, Philadelphia, died at Bar Harbor, Me., September 28, after a long illness. Dr. Horwitz was in charge of the Tampico Hospital during the Mexican War, and later was medical inspector and director in the United States navy. He also had charge of tabulating the casualties of the Civil War. Dr. Horwitz was eighty-two years old. He was the father of Dr. Orville Horwitz, of Philadelphia.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, September 24.

THE CHAIR OF MEDICINE AT OXFORD—THE BRITISH MEDICAL ASSOCIATION AND THE PROTECTION OF PRACTICIONERS—DEATHS IN THE MEDICAL PROFESSION—VACCINATION IN ENGLAND.

Holiday-making and other things have interrupted the continuity of this correspondence so long that the meeting of the British Medical Association at Oxford is now ancient history. This is the less to be regretted, however, since the most interesting part of the scientific proceedings has already been published in the Medical News, and there is little else to record of the gathering beyond the fact that it was in the conventional sense "successful." The most important event connected with it was the engineering which ended in the capture of the Regius Professorship of Medicine by the anti-Sanderson faction. The state of affairs was described in your columns some months ago. Sir John Burdon Sanderson, the previous occupant of the chair, was anxious that it should be transformed into a chair of pure pathology, and strongly urged the appointment of Dr. James Ritchie, who is the University lecturer on that branch of medical science. Ritchie, however, has the disadvantage in the eyes of Oxford men of the high and mighty type—a breed of superior person peculiar to this happy island—of being only an adopted son of their august Alma Mater; moreover, his speech betrayeth him perhaps too readily as a native of Caledonia stern and wild. Against these deficiencies it matters nothing to your academic prig that he is one of the first pathologists in the United Kingdom and a man of large culture and breadth of mind. Therefore, although the teaching staff supported Ritchie he has been set aside. Till shortly before the announcement of the election of Professor William Osler it seemed likely that Ritchie would get the appointment as his opponents had no candidate of real eminence whom they could put forward for the office. The suggestion of Osler must have been a veritable godsend to them and plans were at once laid to secure him. It had been arranged that he should stay with the Dean of Christ Church, but at the last moment Burdon Sanderson carried him off to his lair. Sanderson has, rightly or wrongly, the reputation of an arch-Jesuit, and it was greatly feared that he might cajole or bore Osler out of accepting the post. Nevertheless, Osler was hooked and safely landed, and by way of compensation Ritchie's lectureship is, I believe, to be raised to the dignity of a chair, to which an increased stipend

will be attached. This question of stipend, it may be mentioned, was one of the difficulties in the way of getting a clinician of any professional position to accept the chair. From this point of view the University has certainly been fortunate in securing Osler, but it may be doubted whether that distinguished physician has made an equally good bargain for himself. The Chair of Medicine at Oxford is an expensive luxury. It is an open secret that the Regius Professor at Cambridge spends a good deal more than he receives on maintaining the dignity of his position, entertaining distinguished visitors and the like. Moreover, his time is so fully occupied with multifarious academic duties that he has no time for private practice. Dr. Clifford Allbutt is, for a physician, a wealthy man, having for many years had the lion's share of consulting practice in the North of England, and he was thus enabled to accumulate a fortune which makes him altogether independent of his profession. I do not know if Dr. Osler is so fortunately situated, but it is to be presumed that he counted the cost of the dignity offered to him and accepted it with his eyes open.

The British Medical Association was reorganized two or three years ago, with results which the promoters of the "reform" profess to regard highly satisfactory. The average man would, however, probably say of the change as Falstaff said of Shallow, whom he remembered at Clement's Inn, that its dimensions are to any thick sight invisible. The true inwardness of the transformation may be expressed in the statement that, whereas the Association used to be managed by clique, now it is governed by caucus. The truth is, the Association has for some years past been becoming more and more a one-man show of which Victor Horsley has been the boss. It is said by the reformers that under the old constitution the management of the Association was too autocratic, but it is clear that the rule of a representative Council elected by the Branches could never in the very nature of things have been so autocratic as a despot. The members of the medical profession in this country are sheeplike in their obedience to any one who will take the trouble to lead them, but signs are not wanting that members are beginning to be a little weary of the "boss" system. It is pretty plain too that the boss himself, who is eminently cute, sees possibilities of revolt; the cloud is far off indeed and no bigger than a man's hand, but it is there. Like a prudent navigator, therefore, he is taking in sail and preparing to run. Already one or two of his thanes seem to be inclined to fly from him, and although he has still a compact body of devoted henchmen at his back, his influence has unquestionably waned to some extent within the last twelve months. In proof of this may be cited the significant fact that at the recent annual meeting a scheme for the creation of a department of medical defence (protection against vexatious lawsuits, blackmail, etc.) in the Association, of which he was an initiator and a most strenuous promoter, failed to secure adoption, and was referred back to the Committee which had framed it under his inspiration and guidance. The question is therefore shelved for the present, but it is tolerably safe to predict that the British Medical Association will at some time or another be compelled to undertake the defense of its members against dissatisfied patients and speculative attorneys. There are, however, many difficulties in the way. One of these is the apathy of a large proportion of the profession and the unwillingness of others to pay for a luxury which they think should be provided for them without extra charge. But the chief obstacle is the existence of several independent societies which have for years been successfully discharging the protective function which the British Medical Association is urged to undertake. These societies—of which the Medical Defense Union, having a membership of six thousand or thereabouts, is the chief—not unwarrantably think they have justified their existence and are by no means eager to accept an invitation to allow themselves to be absorbed by the British Medical Association. For this attitude they are seriously taken to task by the satellites of the "boss." The situation reminds one of the famous sketch of an episode in the French Revolution where a cook is shown in the farmyard asking the animals with what sauce they would like to be cooked. To their objection that they do not wish to be cooked, the reply is: *Vous vous écartez de la question!*

Some notable figures in the British profession have recently disappeared. Sir William Mitchell Banks, who largely contributed to raise the Liverpool School of Medicine from the position of a small struggling local institution to that of a University faculty, was a surgeon who combined the dash of the older operators with the scientific precision of the moderns. He was the pioneer in this country of the thoroughgoing operations for cancer of the breast which are now blessed by many who at first cursed them. He was a lover of books, but was disposed to act on Charles Lamb's counsel: "When a new book comes out, read an old one." He was a breezy speaker and a racy writer, qualities which made him very successful as a teacher. He took a leading place in Liverpool Society where he was noted for his good stories and his ready repartees. In appearance and character he was, though a born Scot, a typical John Bull. Sir Frederic Bateman was a physician of Norwich, an ancient city made famous by another knightly physician, Sir Thomas Browne. He was the author of the first treatise on aphasia published in this country, and it was for his investigations on this subject that his knighthood was conferred upon him. Dr. R. E. Dudgeon—though not in a medical sense of the household of the faith, for he was a disciple of Hahnemann—was a remarkable man in his way. He translated the works of his master into English and was the inventor of a sphygmograph which used to be found in the pockets of many physicians who were too sensible to ask if any good came out of Nazareth. Among his patients were notabilities such as John Bright, James Russell Lowell, and Samuel Butler, the author of the philosophical romance "Erewhon." It was owing to Dudgeon's influence that a clause was inserted in the Medical Act making it illegal for medical authorities to withhold, on the sole ground of medical opinions, degrees from candidates who had passed their examinations. It is said that during the fatal illness of the late Queen Victoria's husband, Dudgeon received a royal command to hold himself in readiness to proceed to Windsor at a moment's notice. The summons never came however, and the Prince Consort died in the arms—medically speaking—of William Jenner, who administered the last consolations of orthodox medicine.

The report of the Medical Officer to the Local Government Board, just issued, shows that the Vaccination Act has been better observed in the last two or three years than was formerly the case. In 1901 only 13 per cent. of the 929,882 infants born were not accounted for by the vaccination officers; the corresponding percentage in the three years preceding was 21.5 for 1898, 17.2 for 1899, and 15.6 for 1900. If allowance is made for the exemption of the children of "conscientious objectors," who numbered 30,925 in 1901, the percentage of infants unvaccinated in that year was

17.3. This compares favorably with 19.9 per cent. in 1900, 20.8 per cent. in 1899, and 26.6 per cent. in 1898, figures which again show a steady growth of the practice of vaccination. The detailed tables show that 70.8 per cent. of the children born in England in 1901 were successfully vaccinated—an increase of 2.8 per cent. as compared with the previous year; and that the percentage of "conscientious objectors'" children remained the same, namely, 4.5. In Wales, where vaccination is more popular, 82 per cent. of the children born were successfully vaccinated, and only 0.6 per cent. of the total number were exempted for a "conscientious objection." In London, as a whole, 64.3 per cent. of the children born in 1901 were vaccinated, showing an increase of 2.6 per cent. over the previous year, while the "conscientious objectors" increased from 1 to 1.1 per cent. of the total.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Regular Monthly Meeting, held Monday, May 23, 1904.

The President, Wendell C. Phillips, M.D., in the Chair.

The Passing of Neurasthenia.—Dr. Charles L. Dana opened the scientific business of the evening with the reading of a paper bearing this title.

Neurasthenia Covers a Multitude of Diseases.—Dr. Dana said that he was associated with Dr. Beard when he introduced the word neurasthenia, and at that time he considered it, as he does now, a useful word. Unfortunately, however, a number of affections have come to be included under it which might well merit a more definite designation given them in the course of the development of diagnosis. Neurasthenia replaces a series of even more indefinite terms, as dyspepsia, latent gout, hypochondria, hysteria, the spleen, the vapors, liver troubles, or the apparently more scientific yet scarcely less definite designations, lithemia, oxaluria and even vaguer terms. The word neurasthenia, itself, however, has come to impede progress somewhat by making practitioners satisfied with hasty diagnosis.

Melancholia and Neurasthenia.—Dr. Dana's attention was first called to the too wide application of the word neurasthenia by having patients who were evidently suffering from melancholia tell him so frequently that they had suffered some time before from neurasthenia or nervous prostration. Careful investigation of these cases seemed to make it clear that many of the hypochondriacal states of middle and later life which are really of melancholy nature are made to appear less serious to patients by the comforting term neurasthenia. Of a series of one hundred cases of melancholia, one-third of them had suffered from previous attacks, which had been diagnosed as nervous exhaustion. In all of these apathy, retardation, difficulty and slowness of thought, were present. The real ailment was evidently recurrent melancholia. The difficulty in the diagnosis was the differentiation between the psychosis and the neurosis.

The Phobias.—Dr. Beard laid considerable stress in many cases of neurasthenia on the presence of unreasoning fears. For these he invented many of the names by which they have since become familiar. Misophobia, siderophobia, acrophobia and the like. In the severer forms these patients are really insane. The basis of their condition is evidently a psychosis and not a neurosis. It might be spoken of as a neurasthenic insanity. There is a term, however, for this which is coming into more common use, phrenasthenia or psychasthenia. General practitioners are familiar with one form of this so-called sexual hypochondria in which patients get a fixed idea that their sexual powers are seriously impaired, or that they are suffering from loss of manhood. In women there are hysterical conditions, evidently of mental or nervous origin. Many of these might be spoken of as abortive types of exhaustion psychoses.

Neurasthenia in the Young.—When young persons become queer and lose interest in their work and fail to have the ordinary interests that young persons of their state in life enjoy, it is the custom sometimes to speak of their condition as neurasthenia. Such persons may run away from home, or run away from school, or insist on staying home from school, claiming that they are unable to work. Needless to say in these cases the difficulty is mental and not neurotic. Of late years the insanities of adolescence have come to be studied more than formerly, and the serious condition known as dementia præcox (precocious dementia), may be preceded by pseudo-neurasthenic symptoms. Paranoics often suffer from symptoms that are not manifestly psychical and yet are due to their congenital mental condition. Depression is not uncommon and often is the keynote by which these cases are recognized from true neurasthenia.

Physical Conditions.—A certain number of physical conditions that are very different from neurasthenia may be confounded with it when the symtoms are incipient and obscure. In young people the status lymphaticus with the phlegmatic condition sometimes consequent upon it, may prove difficult of recognition. In older people, arteriosclerosis may give rise to the tired feelings, the sluggish mental operations, the readiness of fatigue and the general discouragement which is sometimes considered to be one of the most prominent symptoms of neurasthenia. During the next ten years, as the result of more careful diagnosis, the use of the word neurasthenia will probably disappear completely, or certainly to a very great extent, from serious diagnosis.

Phobias Pathognomonic of Neurasthenia.—Dr. Rockwell, in discussing Dr. Dana's paper, said that while many groups of nervous symptoms with psychic manifestations had been grouped under the word neurasthenia, in Dr. Beard's mind there seemed to be one ailment that was pathognomonic of the disease. This was some form of phobia or morbid fear. When patients suffer from this and are unable to control it, there is often found a physical basis in a tremor evidently originating in the nervous system and the symptoms are corporeal rather than mental. For this group of cases the word neurasthenia should still be preserved.

Dr. Robert T. Morris said that surgeons see many cases of neurasthenia and Dr. Dana's explanation that they are psychoses rather than neuroses is helpful. Another interesting feature is the declaration that migratory fever, what the Germans call Wanderlust, which sometimes makes young folks run away from home and which seems to be a sort of reversion to the migratory instinct that occurs so commonly in birds and in a few animals, is of psychic origin.

Some Conceal Crack Better.—Dr. Martin pleaded for the use of the word neurasthenia for charity's sake. There are many patients and their friends who

are satisfied with the diagnosis neurasthenia, when perhaps the true condition is a slight mental aberration. So many persons, however, suffer from slight mental aberrations that it would be too bad to label them all. As it has been said, "Nearly all the world is cracked, but some succeed in concealing the crack better than others." The use of the word psychosis will inevitably lead to the suspicion of insanity and to unfortunate consequences, especially to the arousing of prejudices.

Dr. Dana, in closing the discussion, said that major psychoses must be confined in asylums; minor psychoses, however, can well be treated quite apart from the prejudices as to insanity and quite successfully.

The Curette in Acne.—Dr. George Henry Fox said that it has taken him thirty years to learn the use of the curette as the best local treatment for acne. It is far better than any ointment or lotion devised for the purpose. Not that local treatment is of no value, but it is of comparatively little value, so that since he has become accustomed to the use of the curette, Dr. Fox rarely thinks of prescribing mercury or sulphur or any of the other favorite local remedies. The use of the curette is not new and is not original with Dr. Fox, but he considers that its more general use would be extremely advisable.

Technic and Instrument.—The instrument employed by Dr. Fox is an ordinary dull ring curette, such as the gynecologists frequently employ. Where the acne is in an acute stage, its use will give rise to a number of bleeding points and will prove a source of considerable discomfort to the patient, besides not improving his appearance for several days. After a very few days, however, the improvement is so marked, that the patient is very willing to have the treatment repeated as often as seems to be necessary. After the use of the curette, some mild lotion such as borolyptol can be used. Patients should be taught to scrub their faces with a coarse towel and to use cold instead of hot water in washing. Hot water is often recommended in conditions of acne, but it relaxes the skin, while cold water acts as a tonic.

General Treatment.—Acne patients need general treatment even more than local applications. The diet should be carefully restricted and outdoor exercise should be strongly recommended. The doctor must be sure that the patient spends considerable time in the outdoor air. Systematic disturbances of any kind, as any of the forms of dyspepsia, constipation, or genito-urinary conditions, or pelvic troubles in women, must be corrected, of course, or the local treatment will bring about improvement in vain and relapses will inevitably occur.

Dr. Phillips said that he has seen the result of the curettage of acne cases and has been surprised at the rapid improvement which results. The treatment is rough and harsh, causes a good deal of pain, especially to sensitive women, but it does so much good that they are perfectly willing to stand the discomfort. Human pride is always enough to support one in bearing a pain where there is to be an improvement in appearance.

Water Anesthesia.—Dr. Samuel Gant reported a series of operations on the rectum including fistulæ, piles, prolapse, stricture of the rectum, treated under local anesthesia produced by the introduction of water into the tissues. He was led to the observation that water was sufficient to produce anesthesia by trials with weak solutions of cocaine and eucaine. He found that if the solution was not retained in the tissues no anesthetic effect was produced, no matter how strong the solution. On the other hand, satisfactory local anesthesia was obtained, no matter how diluted the solution was, provided it was held in the tissues. He found also that the weaker the solution the less likelihood was there no bleeding afterward, and so he began to use plain water or normal saline solution.

Disadvantages of Cocaine.—The most serious drawback with regard to cocaine or eucaine solution in local anesthesia consists in the fact that there is apt to be considerable hemorrhage after their use. This seems to be due to a paralysis of the blood vessel walls because of the presence of the blood not permitting them to retract normally after the operation is concluded. This does not happen with water anesthesia. The anesthetic effect is produced quite as quickly, and within thirty seconds complete anesthesia for the skin incision can be obtained. After operations done with cocaine one out of every three or four patients will have to be taken care of for several hours until the effect of the drug wears off. Immediately after an operation done with water-anesthesia, the patient may be permitted to leave the office and go about his usual occupation. Dr. Gant has now done some 250 operations by this method. It may be used of course for other parts of the body besides the rectum, with quite as good success.

Technic of Method.—Patients must be frankly told that the first injection causes pain, or they will lose confidence in the physician. The first effect is a stinging pain. This is followed by the appearance of a welt and then the anesthetic effect has begun. Any part of this welt can then be used for further injection without causing pain. It is important that the water should be retained in the injected area and at times, if the fatty layer of the skin is loose and allows the water to flow off, no anesthesia results. The anesthetic effect seems to be due to the pressure upon peripheral nerve endings of the water present. This prevents them from carrying sensory impulses.

Further Advantages of the Method.—In all operations performed by this method, the patients may be allowed at once to leave the office or the hospital, and they need but very little after-treatment. Dr. Gant prefers to have his patients return so as to dress them himself, rather than to commit them to an assistant. The results are always more satisfactory. There is no necessity for locking up the bowels. This only disturbs the patient and often proves a source of discomfort. On the other hand, there is no necessity for making the stools absolutely liquid, for a diarrheic condition induces tenesmus and produces a spasmodic feeling that adds to the discomfort of the patient, without doing any special good. The diet is not very much restricted, but the patient is asked to take a regular diet with an abundance of liquid and just sufficient salts to make the stools soft and remove all sources of irritation for the operated rectum and anus.

Dr. Elmer Lee, in discussing Dr. Gant's paper, said that this method of obtaining local anesthesia can be used with good effect for the removal of sebaceous tumors, or for other superficial operations where the injections can be made without difficulty. There seems to be no doubt that the anesthesia is due to paralysis of the superficial sensory nerves. The effect corresponds to that obtained when the arm is held up for some minutes, until the blood has flowed out of it, and then surrounded by a rubber tube or an Esmarch bandage. Under these circumstances a felon can be incised without discomfort. Whenever general anesthesias can be avoided it is a wonderful event and marks a step in progress. Dr.

Lee said that in treating cases of cholera at St. Petersburg by hypodermoclysis, in which a large quantity of salt solution was injected into the skin, it was found that anesthesia was produced and this is evidently the original observation in the matter.

No After-Pains.—In closing the discussion, Dr. Gant said that while there is no bleeding during the operation, and the oozing afterward is very slight as compared to the cases in which cocaine is used, surprisingly enough the after-pain is also less with the use of plain water. It is not an unusual thing for patients to suffer considerable pain for several hours after operations performed under cocaine or eucaine. It seems not unlikely that the nervous excitement the drug produces causes a condition in which pain is badly borne. Hence the complaints, for patients operated on with water anesthesia do not complain in the same way, though they have had to submit to practically the same experience.

Removal of Adenoids.—Dr. Clarence C. Rice said, that the removal of adenoid growths from the pharynx was probably the most frequent of surgical operations. At a conservative estimate the operation was probably performed fifty times during the day in New York City. Nearly every American child that suffers from nasal catarrh and is liable to frequent colds with tendencies to earache, especially if these are complicated by mouth-breathing, is a sufferer from adenoid hypertophy. The better knowledge of this subject has led the physician to realize that they are the cause of false croup not infrequently, and that they produce a distinct predisposition to pneumonia and tuberculosis. The amount of space in the child's larynx is so small that even a small enlargement may produce great discomfort. Hence the necessity for the complete removal of these growths. This is all the more important, since the after-effects produced by them and the stupid look of the child, the failure to develop properly in intelligence, the tendency to the production of chicken breastedness, all show the necessity for removal.

Reasons for Failure.—Notwithstanding the frequency with which the operation is performed, it is not an unusual thing to find that the removal of adenoids is not followed by the relief of symptoms. Dr. Rice considers that the main reason for this is that the adenoids are not completely removed. For thorough removal, the child must be under general anesthesia and care must be taken to see that every portion of the growth is removed. Attempts to do the operation under cocaine are usually unsatisfactory, unless in adults. Cocaine hardens the tissues and makes it difficult to detect just where adenoid hypertrophy exists, and besides, though the operation may not be painful, it still has most of its terrors for children, who are very much freightened at the manipulations and the bleeding. Physicians will say that the removal of adenoids is an easy operation, and he who acts on this supposition is almost sure to fail. Adenoids are sometimes said to recur, but the real explanation is that they were incompletely removed and the previous hyperplasia continues in the portions left.

Faulty Instruments and Technic.—The main reason for the failure of relief of symptoms is that instruments devised for the removal of adenoids are often faulty. They should be carefully selected to suit the individual case, and the curve in them should be laid down on anatomical lines. It is sometimes considered that if a large portion of the adenoid tissue is removed this will lead to the atrophy of the remaining tissue. But this is not true. In young children practically the only place where adenoid tissue occurs is in the pharynx and the posterior nares. In children between five and fifteen years, however, the hypertrophic process extends some distance down the pharynx and is likely also to have processes around the entrance to the Eustachian tube and along the pillars of the pharynx. For the removal of all this pathological tissue patience is needed.

Dr. Jarecki, in opening the discussion, said that general practitioners of medicine must not forget that there are some other causes for noisy breathing, and for snoring, than the presence of adenoids. In not a few of the cases in which operations for the removal of adenoids have failed to bring relief of symptoms, the reason for the failure has been that there were no adenoids present before the operation. The general condition of some of the little patients is responsible for some of the nervous symptoms and the noisy breathing, and if care is taken to improve the general health, they get well.

Position for Removal.—Dr. Quinlan said, that the best position for the removal of adenoid overgrowths is the upright. In this way the patient is less likely to inhale material and, besides, all the tissue under the influence of gravity hangs down into the vault of the pharynx and the surgeon can readily get at it for removal. There is good drainage into the stomach, and with an expert anesthetist there need be no fear about the effect of the anesthesia. In a number of operations done in this way, Dr. Quinlan has never seen any serious hemorrhage.

Cerebrospinal Meningitis Epidemic.—Dr. Henry Dwight Chapin presented some notes on the present epidemic of cerebrospinal meningitis. This disease is practically always endemic in New York. But early in March it began to increase. During the past ten weeks or more, the disease has occurred at least ten times as frequently as during the corresponding weeks of the last year. The epidemic has given a series of cases that are very irregular in their course and for which no clinical picture can be presented. The onset in most cases has been fairly abrupt, and in this the cerebrospinal meningitis differs from tuberculous meningitis. Among the first symptoms are vomiting and chills, which may go on to actual rigor. The severity of the onset is an indication of a serious prognosis. There are exceptions to this rule, however, and while stupor and coma early in the case usually mean a fatal termination, unexpected recoveries take place. Headache is extremely common, and the retraction of the head is a typical symptom. This rigidity may go on to opisthotonos. There may, however, be sudden improvement and even a tendency to sudden variations. Convulsions may be present up to the fourth or fifth day, but are unusual later.

Nervous Symptoms.—General hyperesthesia usually exists as in all meningitises. Great irritability, however, passes on into coma before very long, as a rule. Kernig's sign, as also Babinski's sign, are of some value, and Kernig's is almost constantly present. Very high temperature, due to nervous disturbance, is very frequent. A temperature of 106° to 107° F. by no means precludes the possibility of recovery. Sometimes temperatures drop very rapidly. In one case Dr. Chapin saw a drop of nine degrees in about ten hours. Other symptoms may be very severe and yet recovery take place. The patient with double neuroretinitis recovered. Involvement of the special senses through the nerves leading from the brain is

very common, as the result of the neuritis set up permanent crippling of the senses may be produced. The nervous symptoms are very often relieved by lumbar puncture and this constitutes the only sure means of diagnosis in mild cases.

Possible Contagiousness.—It is not known whether the disease is contagious or not. It does not seem to spread, however, from one patient to another. It is impossible to trace any sure connection between successive cases of the disease. While it is said to occur usually among the poor and in crowded quarters, this epidemis has invaded practically all sections of the city. The disease usually spreads during cold weather.

Eye and Ear Symptoms.—Dr. Pooley, in the discussion said, that occasionally the eye and ear are affected at the beginning of the disease, and then the cause of the local symptoms is metastasis from within the cranium. Later a true neuritis is set up which travels along the cranial nerves. The metastatic affection produces an iridochoroiditis and not a neuroretinitis. Usually this complication affecting the ear produces permanent deatness. A loud persistent tinnitus is often complained of and if the patient convalesces while the ear affection is still in existence, some unsteadiness of gait is seen. Not infrequently both ears are affected, and the patient is left totally deaf. Sometimes one eye is spared.

Diplococcus Intracellularis in Otitis.—Occasionally in the pus from an operated case of otitis media a diplococcus resembling Weichselbaum's meningococcus is found. This is apt to cause alarm at first, lest the meninges should be affected, and the otitis be only secondary. It seems evident, however, that this micro-organism is much more common than has been thought. Unless these cases have presented symptoms of meningitis before, meningitis never develops. The meningococcus may be as common in the air as is the pneumococcus, but requires certain conditions favorable to its growth before it seriously invades the organism. It is possible in certain cases of otitis for the epidemic cerebrospinal meningitis to be the cause of this complication, and yet have run so mild a course as not to be recognized until the peculiar set of symptoms caused by it are found to be already in existence within the ear.

HARVARD MEDICAL SOCIETY OF THE CITY OF NEW YORK.

Regular Monthly Meeting, held Saturday, May 28, 1904.

The President, Charles G. Schram, M.D., in the Chair.

Double Epididymitis.—The scientific business of the evening began with the presentation of cases, and Dr. Follen Cabot presented a case of double epididymitis. There was distinct thickening and induration, especially of the tail of the epididymis, and the indolence and comparative non-progressiveness of the affection seemed to point to a tuberculous origin. There is some question as to whether ill-advised injections given for the discharge that was very slight may not have had something to do at least with the condition on which the tuberculous process developed.

Double Inguinal and Femoral Hernia.—Dr. Ramon Guiteras presented for Dr. John B. Walker a case of radical operation done for double inguinal and femoral hernia. The inguinal hernia had been operated upon first on both sides, and when the patient sat up double femoral hernia developed. The child is five years old and the results obtained from the double operation have so far been very satisfactory.

Functional Albuminuria.—Dr. J. Bergen Ogden described a case that he considered to come under the head of functional albuminuria. This symptom-complex, for it does not seem to be a disease, has sometimes been called physiological albuminuria. There are many clinicians, however, who object to the term physiological albuminuria, since by no physiological process can albumin find its way into the urine from the blood. The objection may be far fetched and yet, as was pointed out by most of the authorities on the subject, in the discussion held before the London Clinical Society, in December, 1903, functional is a better word, because a more non-committal term than physiological albuminuria. Sir William Broadbent favors the term postural albuminuria, as the appearance of albumin in the urine absolutely depends on the position of the patient. While there is no albumin in the urine during and just after the time that the patient is lying down, it makes its appearance invariably after he has been standing for some time, or after he has taken some exercise. This form of albuminuria is also spoken of as cyclical, or the albuminuria of healthy persons. The albumin is usually absent from the urine in the early morning hours, but it increases in amount as the day advances, having its maximum usually at night.

Albuminuria of Adolescence.—The symptom-complex has been observed most frequently in boys under twenty years of age, and so is often spoken of as the albuminuria of adolescence. It seems to have some connection with the systemic development going on about this time and with the drain on nutritional resources which so often causes disturbance of the blood, giving rise to the characteristic ailments of this period in young men as well as in young women. It seems to occur most frequently in those who do not take much exercise or who take their exercise by fits and starts. There is an absence of organic lesions and the albuminuria is usually discovered as the result of an insurance examination or because of some curiosity or accidental urinary examination for some purpose. The patients never have any cause for complaint in their general health, have no special sense of weakness and no tendency to any of the serious effusions characteristic of the albuminuria of kidney disease.

Etiology.—There seem to be two causes for the affection. The first is muscular exercise and the second unsuitable diet. Senator and Granger Stewart thought that it was sometimes due to an especially rich proteid food consumption. That it was a sort of alimentary albuminuria due to a superabundance of albuminous food just as alimentary glycosuria may be produced by too great indulgence in sugar-containing food. In Dr. Ogden's experience, however, any abundance of diet seems to be causative of it. Usually it has been noticed that there is an increase of tension in the pulse. Often a violent cardiac impulse has been noticed. An increase in the blood pressure within the kidney is then supposed to be responsible for the leaking out of some of the serum albumin from the blood.

Hypertrophy of the Right Ventricle.—Sir William Broadbent says that in all the cases in his experience the left ventricle has been rather weak but the right ventricle has been hypertrophied, and that

while the apex beat was not specially strong, the valve sounds over the right ventricle could be heard with much more distinctness than normal, while those of the left side of the heart were rather weaker than normal. In the experience of others the second sound of the heart has been reduplicated, probably because of a failure of the valves on the two sides of the heart to act at the same moment in accentuation of the valves of the right side. The circulatory system is the underlying causative factor for the functional albuminuria. It may be said at once, however, that the condition of the blood vessels of the kidney, which allows the passage of albumin through them, is not understood, nor does there seem to be any way of appreciating what the leakage may be attributed to.

Illustrative Case.—Dr. Ogden's patient was a young man of twenty years, a laboratory worker, whose mother died of some kidney trouble and whose father had suffered from heart disease. He had noticed, one day, while examining his own urine, out of curiosity, that it contained some albumin. Physical examination then was made, and while his apex beat was found to be strong and forcible, his heart was not enlarged and no difference could be detected between the action of the two sides of the heart. The young man was rather nervous and excitable, he blushed easily and there was a tendency for easy disturbances of the cutaneous circulation. More careful examination of the urine showed occasionally hyaline casts with some red blood cells, but not enough to be considered of serious import. The cause of the condition was then looked for, and as there was marked oxaluria his diet was carefully inquired into in the hope of finding the etiological factor. It was found that the young man was living on the outskirts of Brooklyn, where the city water was not yet distributed, and drank a considerable quantity of root beer. This was considered to be probably the cause of the appearance of oxalates in the urine. After he had ceased taking it for some time no further large primary crystals of the oxalate series were formed, though some secondary crystals of oxalates were present. The only treatment suggested was an abundance of water and care with regard to his diet. As the result of this régime all the formed elements in the urine gradually disappeared but the albumin constantly remained. In six months, except for the presence of albumin, at most only a trace (about one-twentieth of one per cent.), the urine was absolutely normal. Hourly specimens were then examined, and it was found that the first specimen in the morning contained albumin. An hour after the patient's rising from bed, however, albumin appeared and continued to be present all during the day, reaching a maximum at night. The patient was asked to examine his urine himself before getting up, and found that urine passed every hour from five till eight in the morning, while he was lying in bed, was absolutely free from albumin, though within an hour after he got up albumin was present. The boy was perfectly well and felt no inconvenience of any kind, notwithstanding the presence of these urinary symptoms.

Result of Exercise.—On Mondays, after the boy had taken considerable exercise on Sunday, albumin was more abundant than on other days during the week when this exercise was limited to the ordinary walking around in the laboratory with light work. Under instructions he lay down every afternoon for four hours on several successive days, between twelve and four. After the first hour no albumin appeared in the urine, though it made its appearance promptly after he got around on his feet again. The limitation of his food seemed to make no difference, for when he went without lunch the albumin continued to be present in the same way. The young man was never a very hearty eater, ate considerable bread, and not very much meat or eggs. In this case then the diet seems to have had little if any effect on the production of the albumin in the urine.

Change of Occupation.—After a time he resolved upon a change of occupation and became a carpenter's helper. This kept him out of doors most of the day and gave him much more strenuous exercise than before. His general condition began to improve at once under this, and within a month he gained ten pounds in weight. Notwithstanding the fact that before this exercise had apparently always increased the amount of albumin in his urine, the exercise now taken did not seem to prove harmful. Careful examination showed that the amount of albumin was not larger than before, but, if anything, was a little less. The young man has continued to improve in health and feels ever so much better than he did when his occupation kept him indoors so much of the time.

Typical Functional Albuminuria.—Dr. Ogden considers that this is a typical instance of functional albuminuria. The albumin present was serum albumin, and no globulin or albumoses were found at any time. The specific gravity of the urine was on an average about 1.021. It varied between the extremes of 1.012 and 1.029. The uric acid was about normal and the urea a little above the average. There is, of course, the question of the root beer in the etiology of the irritative condition of the kidneys which seemed to be present when the urine was first examined. The root beer seemed to bear a definite relation to the oxalates found in the urine, and Dr. Ogden considers that it was certainly the cause of the oxaluria. This was due either to the fact that the fermentative process produced oxalates in the liquids which were absorbed, or their presence in the digestive tract led to intestinal fermentation, with the production of oxalates which later appeared in the urine.

Favorable Prognosis.—The prognosis in most of these cases is not at all unfavorable. Sir William Broadbent says that in a large experience with postural albuminuria he has never seen unfavorable symptoms develop from it. Pavy says that he has watched cases of functional albuminuria for fifteen years and they have not, in that time at least, proved to be the beginning of nephritis. The treatment for them consists mainly of fresh air and exercise. Patients especially need to be out much more in the air than they have been before, and the attending physician must be careful not to cut off their exercise, as he might be tempted to do, since exercise increases the amount of albumin in the urine, but rather to encourage the taking of regular but not violent exercise. It is important, of course, to allay any nervous symptoms that patients may have as the result of having been refused by life insurance companies or having been told by some too zealous physician that they have albumin in their urine.

Treatment.—The treatment consists in the improvement of the general condition rather than in

any special attention to the kidneys. Tonics such as iron, arsenic and quinine can be used with benefit. Too much care with regard to the diet by constantly calling the patient's attention to the possibilities of his case is apt to do more harm than good. Some of the English authorities in the recent discussion before the Clinical Society of London cited cases in which insistence on a milk diet, with the idea that the albuminuria was due to kidney disease, which might be alleviated by absence of all irritation of the kidneys, gave rise to nervous symptoms which became very obstinate to treatment after persistence in this insufficient nutrition for some time. Dr. Ogden's own case shows the necessity for removing from the dietary any article that is especially suspicious, such as seemed to be the root beer, and then the advisability of outdoor life with sufficient exercise to give a good, healthy appetite.

Dr. Follen Cabot said that physiological albuminuria is not so infrequent as has been thought. Usually the risks refused by insurance companies have passed beyond the point of what may be called true physiological albuminuria. Even where mild cases of nephritis are discovered now, quantitative tests in order to ascertain the amount of insufficiency of the kidneys are made, and especially the solids in the urine are studied with the idea of giving the patient a chance to become a substandard risk and not to be refused absolutely.

The Right Heart and Functional Albuminuria.—Dr. Charles G. Schram said that Broadbent's sign of the increased activity of the right heart should prove a valuable diagnostic aid. In ordinary nephritis there is of course an hypertrophy of the left heart, with distinct increase of the sounds on the strength of the apex beat. Dr. Schram had a case under observation for some three to four years in which the amount of albumin present is about one-eighth of one per cent. In all other respects the young man, who is not yet twenty, seems perfectly well. His attention was called to his condition when he, to his astonishment, was refused by a life insurance company. After careful study of the case of some months Dr. Schram suggested the advisability of reapplying to the insurance company and gave a certificate attesting his disbelief of any true nephritis being present. The case was not accepted except as a substandard risk.

Rapid Growth and Movable Kidney.—Dr. Ernest Gallant said that functional albuminuria seems to occur with more frequency in young persons who grow rapidly and are not of very strong constitution. Some neurasthenic symptoms are likely to accompany it. After growth has been attained the condition may pass off, though sometimes the habit seems to be formed and the slight albuminuria continues. On the other hand, a certain amount of albuminuria is quite common in patients suffering from movable kidney, even though but to a very small degree. In these cases there are apt also to be some formed elements in the urine. Slight amounts of movable kidney are not infrequent in young persons who have acquired their growth rapidly, and these two conditions should be borne in mind in connection with this affection.

Dr. Ogden, in closing the discussion, said that in his case the kidneys were not palpable nor movable on careful examination made in both the lying and standing positions. Most insurance companies reject these cases but they seem scarcely to be justified in so doing. The improvement of the condition, apparently made worse by exercise, when exercise was taken as an habitual occupation is the most interesting feature of the affection.

General Cardiac Hypertrophy.—Dr. Charles G. Schram presented a patient suffering with general hypertrophy of the heart and with possible aneurism. The patient was a man of fifty-two years, whose father died at fifty-eight years and whose mother at fifty-five years, and whose own personal history was excellent. From his earliest childhood he had not suffered from any of the infectious diseases and had not rheumatism and denied all venereal history. A brother suffered from gouty deposits in the ear and fingers and toes, but the patient had never suffered in this way. When about twelve years of age he began to work in a hotel, taking as far as he was able to the duties of porter. He carried heavy bundles up and down stairs to the limit of his strength and, as elevators were not much used at the time, had to do much more carrying than is usual at the present time. When he was about eighteen years old his mother noticed a bulging of his left chest. He had never noticed this before. This gave him no inconvenience, however, and he continued to work hard for six or seven years more. At twenty-five he became a butcher and worked at this for twenty years, as a rule devoting eighteen hours a day to it. In this he also had to do a large amount of heavy lifting. He never suffered from any symptoms of shortness of breath or the like and considered himself a healthy man. About seven years ago, having acquired a competency, he settled down to a quiet life.

Development of Symptoms.—About two years ago he began to lose strength and to suffer from dyspnea. At the same time, he coughed considerably and brought up abundance of sputum. He could not rest in bed and had to sit up all night and rest on a chair. His appetite was good, however, and his general condition otherwise not very much disturbed, until about six months ago, when he began to suffer from edema with increasing cyanosis and other signs of failing heart. When he came under observation his lips and fingers were quite blue, and the number of fine, crackling râles at the bases of both lungs showed the existence of a hypostatic condition from disturbance of the circulation. A distinct bulging was found to exist over his left chest, beginning at about his second rib and extending to his sixth. The cardiac impulse was somewhat diffuse in both the fifth and sixth interspaces about one inch outside the mammary line. On the right the heart dulness extended to about an inch beyond the sternum. Relative heart dulness could be demonstrated just below the second rib and absolute dulness just below the third. No thrill was perceptible at any point over the cardiac area. Owing to the pulmonary condition it was expected that the second pulmonary sound would be found accentuated, but it was not. The only murmur to be heard over the heart was systolic in time, heard most plainly over the mitral area and conducted around into the axilla, so as to be heard even at the back. The general heart condition seems to be one of hypertrophy with some dilatation, this latter factor being important in the production of the signs of failing circulation and being probably of comparatively recent orgin.

Suspicion of Aneurism.—The possibility of aneurism in this case can not be absolutely excluded. If there were dilatation of the ascending aorta it might

well push the heart forward against the chest wall, and its presence might lead to the hypertrophy which the enlarged dulness testifies. The cause of the condition is evidently the heavy lifting to which the patient was subjected at a very early period of his life, when he was scarcely more than a child, and which led to the hypertrophy of his heart with perhaps the consequent yielding of the front wall of the thorax over the organ. The stages of the affection can be traced rather readily. During adolescence there was naturally a prompt compensatory hypertrophy to make up for the work required of the patient, at the same time that his growth was making calls upon his circulatory system in other ways. During adult life his compensation was excellent. At about the age of fifty years his compensation began to give out. Two years later it broke down completely and the pathological picture presented itself.

Treatment.—The patient was put on a regimen including regular exercise with a large amount of rest. He was advised not to take much fluids and very little food in the evening. Besides this he was given tincture of iron rather freely in the shape of Squibb's preparation, which in Dr. Schram's hands has always given excellent results. For short periods he was given infusion of digitalis and during the intervals iodide of potash. This latter drug seemed to lower arterial tension and lessen the feeling of discomfort. Under this regimen the patient rapidly improved and now sleeps much better, is not troubled with the persistent cough that was formerly so annoying; he has a better appetite and generally considers that his condition was so much improved that life looks reasonably hopeful once more. There seemed no reason why, under a continuance of careful attention to the details of life, especially exercise, rest and diet, the patient should not continue to be in good condition. His circumstances are extremely favorable for therapeutic purposes. He has no duties that are imperative; he has no source of worry, and he can regulate his life absolutely as he likes and live where he will. The prognosis, therefore, of the case is good.

Child Labor and Athletics.—Dr. Schram considers that this case is an excellent example of the evils of child labor. When during the developmental period strains are put upon the heart, the results are almost sure to be seen in hypertrophy with subsequent degeneration of that organ. Nearly the same thing happens, however, from overindulgence in severe athletic sports, such as is only too often the case in preparatory schools and colleges at the present time. Growing youths are tempted to make supreme efforts for the glory of their school or college or for their own personal vanity and the result is hypertrophy of the heart.

Hodgson's Disease.—Dr. James J. Walsh, in discussing Dr. Schram's case, said that in certain respects it resembles a symptom-complex described by an English physician of about a half century ago, after whom this type of affection is sometimes known as Hodgson's disease. The affection consists of a dilatation of the beginning of the aorta, just as it leaves the heart. This dilatation of the conus arteriosus is not really aneurismal in character, nor in the cases so far observed has it ever given rise to aneurism. It usually causes the apex beat to be displaced somewhat downward and outward, and brings the arch of the aorta much nearer to the finger applied in the suprasternal notch between the sternocleido muscles than is usually the case. An area of dulness to the right of the sternum in the neighborhood of a second rib is also usually a concomitant symptom. The murmurs occurring in the disease are irregular, though usually there is a systolic murmur at the aortic orifice. The cases are irregular in type, and it is not impossible that further study might show that this is really a case of so-called Hodgson's disease.

Congenital Anomaly.—Dr. Stephen Burt suggested that the bulging of the chest anteriorly in the heart region might be congenital. The fact that the boy himself had not discovered it until it was pointed out by his mother was, in itself, no proof that it had been acquired, since such malformations often escape the notice of young people. The heart affection would then be the result of the strain in early youth, though perhaps not connected with the chest deformity.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held June 2, 1904.

Section on Obstetrics.

The Chairman, Palmer Dudley, M.D., in the Chair.

The scientific business of the evening was opened by the presentation of specimens.

Internal Pseudohermaphroditism.—Dr. Ladinsky, presented the specimens of a case of this rather rare condition. The patient from whom they were removed was a woman of forty-six years, who had been married at about the age of twenty. She menstruated rather late, only beginning when nearly nineteen years of age and then flowing only a slight amount and irregularly. She suffered from epistaxis all through her life at irregular intervals. It was presumed that this was compensatory for menstruation. Examination in the vagina showed no cervix and on bimanual palpitation no uterus could be discovered. Examination by the rectum was equally unsuccessful in this respect. A smooth ovoid mass could be felt in the right labium. This was reducible and was considered to be a hernia. A radical operation was done and when the sac was removed a tissue resembling the broad ligament was found, and on microscopical examination portions of uterine tissue were discoverable. The picture, however, was extremely anomalous, and some testicular tissue could be demonstrated, as well as appearances resembling those of the corpora amylacea of the prostate.

Large Uterine Fibroid.—Dr. Ladinsky also presented a large fibroid tumor, which had involved the whole uterus, even the cervix. This special enlargement of the uterus simulated pregnancy. As the fibroid was rather soft, there was a deceptive feel as of fetal contents. The only proof of the non-existence of pregnancy was the continuance of menstruation and the frequent bleeding. In discussing this case Dr. Palmer Dudley said that these cases are not often as deceptive as this. It is not frequent to see large fibroids, as, fortunately, these tumors are removed before they become of large size. In most cases it is impossible to extirpate them by the morcellement, and the uterus need not necessarily be removed. In such cases, however, there should be thorough drainage, and to avoid the danger of subsequent sepsis the uterus should be thoroughly curetted beforehand and then swabbed out with pure carbolic acid.

True Hermaphroditism.—Dr. Palmer Dudley said that some years ago he had seen a case of that rare

Dr. L. J. Hammond, in the discussion, said that this very instructive case is the exception, not the rule, in ovarian cystoma, the typical fluid found being characteristically straw-colored. This chocolate-colored contents is not uncommonly found in the broad ligament cysts of the paroophoritic type. It is instructive, therefore, to note this condition of papillomatous change existing in ovarian cysts. These masses, as described in this specimen, might readily account for the blood-mixed fluid found in such large quantity in the cyst.

Dr. Formad said that this was not a broad ligament cyst, but an ovarian cyst. This was shown by the microscopical examination.

The Ultimate Results of Induced Labor for Minor Degrees of Pelvic Contraction.—Dr. Richard C. Norris read a paper with the above title and reported in detail thirty cases, with their results for mother and child, the degrees of contraction varying in the conjugate diameters between eight and ten cm. There was neither maternal mortality nor morbidity. The infantile mortality was ten per cent., after following the histories of the children subsequent to their leaving the hospital. Dr. Norris took issue with those who recommend hasty Cæsarean section for these grades of deformity. He quoted Williams's statement that hardly more than 50 per cent. of the infants survive the first few months of life, and said that that statement could only be true of induced labors for high grades of contraction, a field no longer to be tested by labor, but by elective Cæsarean section. He also referred to Reynolds's statement that Cæsarean section is indicated when, with any definite pelvic contraction, there is a history of repeated childbirths during previous operative labors, and for healthy primiparæ with conjugates between three and four inches; that the amount of difficulty which will occur should be estimated by observations of the progress of labor; but that the possibility that an indication for the Cæsarean section may arise would always be borne in mind in such a case, and that all the preparations for it should be made beforehand, or at least during the first stage of labor. Norris referred to his tables, and asserted that it was just in such cases that his best results were obtained by induction of labor, not more than four weeks and usually two weeks before term. The assistance given nature by skilful induced labor, and the employment of the Trendelenburg-Walcher posture, had repeatedly avoided the necessity for a difficult operative delivery, which ordinarily gives the high fetal mortality. He discussed the difficulties of accurate estimation of the duration of pregnancy, and outlined the plan he followed to eliminate as far as possible the induction of labor at too early or too late a period of pregnancy. An analysis of his tables of thirty cases was presented, and a plea made for the adoption of this method of treatment in place of the hasty and oftentimes spectacular Cæsarean section, which, in his judgment, had sometimes been an exhibition of experimental and unnecessary surgery.

Dr. George M. Boyd, in the discussion, said he felt that the profession ought to thank Dr. Norris for bringing this interesting subject before it. While Reynolds may do a long series of Cæsarean sections, and Norris still another series of induction of premature labor without death, there will be cases of death from Cæsarean section and from induction of premature labor. Dr. Norris, however, is to be congratulated upon his results, which show a much lower fetal mortality than many of this society have enjoyed. It has been the high fetal mortality which has caused many to refrain from performing the induction of premature labor. In Dr. Boyd's experience, following the Lying-in Charity for fifteen years, he confesses that he has only in exceptional cases resorted to induction of labor, because of his inability to measure the length of gestation. It seemed to him there must almost always exist a latitude of two or three weeks,, and it is just that latitude that makes the operation an uncertain one. If the operation is of any real benefit, it must be done sufficiently early. Then, again, the operation itself is an uncertain one, because some patients will go into labor right after the introduction of one or two bougies, and other patients not until after many hours. In some cases he has seen the unfortunate rupture of the membranes with the best operators. There is some danger, also, of striking the placental site, and some slight danger from infection, so that, fearing the early rupture of the membranes, he has preferred to allow his patients to go to term. He feels that the only really accurate way of measuring the pelvis is by the test of labor and noting whether the head is or is not adapting itself to the birth canal. As far as his experience goes, he feels that the patient would be best served by permitting her to go to term, and, after the test of labor, resorting to the operative measures that seem best indicated.

Dr. Daniel Longaker said that the subject under discussion is one of considerable importance, and he thinks the society is fortunate in having such an able exposition of the matter as that given by Dr. Norris. It seemed to him (Dr. Longaker) that the indications for this particular operation are clearly set forth in limiting the induction of premature labor to the lesser degrees of pelvic contraction. Going back some considerable time in his own experience, he remembers different cases in which the operation of induced premature labor was ill-advisedly applied to degrees of pelvic narrowing which were entirely too great to permit of even the safe delivery of a child that had only reached the twenty-eighth week of gestation. For instance, a child that had not attained a weight of more than 5½ pounds and as nearly as could be determined a period of gestation of twenty-eight or thirty weeks, with a difficult extraction in a woman whose direct conjugate was estimated to be 7½ cm. or a little under, too great a degree of contraction to permit safe extraction, and the child had to be delivered by version. If one selects the operation for that class of cases, it must fall into disrepute. That particular woman was safely delivered twice after that by symphysectomy of a living baby of large size at term. The cases in which induced premature labor will have brilliant results are the lesser degrees of contraction, the direct conjugate being not under eight cm. Dr. Longaker does not know whether he is correct in his conclusion, but his impression is that in these cases there is a tendency, for some reason which he does not care to discuss, to protracted gestation. He has knowledge of cases which have been pretty carefully studied in which the gestation has gone to almost three hundred days, twenty-eight to thirty days beyond the computed time, and where the size of the child was an additional evidence that it had been carried beyond the average time. He thinks that where one has reason to know from external measurements and from the history of preceding labors that there is pelvic contraction, it behooves

him to watch the case with extreme care and to estimate not only the size of the pelvis, but the size of the fetal head, which can best be obtained by the Miller method. In a case of this kind one should not allow the gestation to be contracted, and much will be gained by timely interference.

Dr. William R. Nicholson said it struck him that the induction of premature labor is one of the most useful obstetrical procedures, since the smaller grades of pelvic deformity are the common ones met with. It seemed to him that to allow a woman with a contracted pelvis to go into labor with her first child, to determine whether she can give birth to that child spontaneously is in certain cases a pretty dangerous method to follow, unless the patient be of the best class of society, since in certain grades of practice it is not possible to do Cæsarean section in private houses. He thinks Dr. Boyd has stated all the possible objections. The only thing that occurred to Dr. Nicholson, in listening to Dr. Boyd, was that a man who was unfit to put in a bougie, so far as sepsis was concerned, was unfit to do a Cæsarean section. While he has not induced labor 100 times, he has never seen the slightest difficulty in regard to the rupture of the membranes, and has never had a case which has shown temperature after the bougie was in place, unless the induction was prolonged and the membranes ruptured.

Dr. R. C. Norris spoke about the difficulty of estimating the duration of pregnancy. He would like to ask Dr. Boyd, when he predicts for his patients the probable date of confinement, how many times his patients go three or four weeks over that time? He does miss it once in a while, but in his hospital and private practice he finds pretty accurate estimates made. When the estimates have been inaccurate, he has explained the error in two ways: Either the woman herself has made a mistake in her recollection of her last period and of the date of quickening, or she was that type of woman who conceives just before her first missed period rather than just after her last period. The estimation of the duration of pregnancy is not difficult when one has a reliable history. It is usually in the lower classes that the women forget or disregard the date of their last sickness, and in these cases he admits it is often difficult to determine the duration of pregnancy solely by fetometry. You cannot do so as accurately as by the history of menstruation and quickening. All these facts should harmonize—the history of menstruation and of quickening and the estimated size of the child and height of fundus. He has known the advocates of hasty Cæsarean section to make the same error in calculation, and to deliver six-pound babies that have to be put in incubators. The plea of his paper is emphasized by Dr. Longaker, when he speaks of confining this discussion to minor degrees of pelvic narrowing. The period of time required for the determination of an induced labor has varied from six and a half to sixty-four hours. The rubber bag is of the greatest value. The bougies used alone often will not be efficient. He remembers Dr. Parvin on one occasion at Blockley putting in a series of bougies which remained for a week or so without bringing on pains. In cases of that kind, the rubber bag is essential, and in his (Dr. Norris's) cases he accomplished the result in an average of twenty-nine hours and without danger of sepsis. Premature rupture of the membranes when passing the bougie carries with it a certain amount of danger. Partial separation of the placenta he has noticed several times, but never with an ill effect upon mother or child. The danger of infection is a matter of individual equation, and depends upon one's aseptic technic. The test of labor is justifiable in most degrees of pelvic deformity that come to one, and he does not see any disadvantage if the labor is brought on two to three weeks before time. You have a smaller baby's head, and if the test shows that she is going to fail, you are in a better position to do version or use the forceps with a baby two weeks under its time than with a baby ten days or two weeks over its time. He has read nothing in literature, or heard any remarks from men doing frequently the Cæsarean section for the same grade of cases that would make him change his position, and his own records carefully studied have convinced him more than ever that many Cæsarean sections can be safely avoided by skilled induction of labor.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-fourth Annual Meeting, held at Pittsburg, September 27, 28 and 29, 1904.

FIRST DAY—SEPTEMBER 27.

This meeting was called to order at 9.30 A. M., in Music Hall of Carnegie Institute, by the President, Dr. William B. Ulrich, of Chester.

Prayer was offered by the Rev. Dr. McIlvaine, which was followed by addresses of welcome on behalf of the citizens of Pittsburg by Mr. J. A. Blair; on behalf of the Allegheny County Medical Society by the President thereof, Dr. T. M. McKennan, in which he reviewed the progress made by both the Allegheny County Society and the State Society, since the first meeting of the State Society in Pittsburg, about half a century ago. These were followed by an address of welcome by William J. Holland, Ph.D., LL.D., Curator of the Museum of the Carnegie Institute, in which he reviewed the life and work of Andrew Carnegie and commented upon his gifts to the city of Pittsburg.

Address in Medicine.—Dr. Henry Beates, Jr., of Philadelphia, said that medicine was essentially the consequence of cause and effect, and that the highest physical and mental health and character were necessary to a physician in order that he might properly execute the bond of trust existing between him and his patient. He dwelt upon the detrimental effect of the spirit of commercialism, which to some extent is invading the ranks of the professions, as well as the electropaths, osteopaths, etc., and urged the necessity for the education of the laity to the value of consulting only a qualified practitioner. He urged the necessity for the better fundamental education of the medical student before he is allowed to matriculate at colleges, and believed that only those should be permitted to enter who had the required preliminary education.

Address in Surgery.—Dr. Winters D. Hamaker, Meadville, dwelt particularly upon the disadvantages of the physician when sued for malpractice, assigning as reasons: (1) His prosecutor is in nearly all cases without property, and the juries know that the counties must pay the costs if the suit fails; (2) in many of the cases the poor results have been brought about by neglect or disobedience on the part of the patient or his friends; (3) before a jury a case may be made out worse than it really is or

can be "made up" entirely. (4) Courts will not allow an examination under an anesthetic to make a complete diagnosis. (5) The profession has devised no system of common defense. (6) The juries are ignorant of the subjects discussed. (7) So-called experts, very often ignoramuses, are brought in to testify against the defendant. (8) The impossibility of obtaining good results in many cases of severe injury. He urged that the surgeon in complicated cases should insist upon frequent consultation, X-ray examinations and strict obedience from the patient. Reference was made to the method of insurance companies issuing policies to physicians against such losses, and the Society recommended to consider the advisability of appointing a committee to investigate this matter as well as the securing of more favorable legislation.

Address in Obstetrics.—Dr. X. O. Werder, of Pittsburg, spoke on the Treatment of Pregnancy Complicated by Pelvic Tumors, in which he said that ovarian cysts, being a constant menace to the safety of the mother during pregnancy, should be promptly removed at any period of gestation; (2) pregnancy complicated by fibroid tumors should as a rule be treated on the expectant plan, and require interference only when serious danger to the mother arises; (3) when carcinoma of the uterus is discovered during pregnancy, immediate radical operation should be done, when the disease is still in an operable stage, regardless of the child. When the neoplasm is inoperable, however, the life of the child becomes the paramount consideration in the treatment.

Address in Hygiene and State Medicine.—Dr. Alexander C. Abbott, of Philadelphia, spoke of nuisances and places which, under improper care, might become such; the compilation of vital statistics, the management of contageous diseases and the establishment of hospitals for their reception, as well as maritime and, when necessary, inland quarantine. The scant mortality and vitality records in the rural districts, he felt, were in a large measure accountable for the fact that they were able to report lower death rates from certain diseases than the municipalities, and especially urged the value of vaccination as a preventive of smallpox. He also dwelt upon the necessity for more accurate vital statistics from the country districts where the cities received their milk and water supplies, and believed better results would be attained if the examination of the applicant for a license to practise medicine was directed more to bedside and laboratory demonstrations, and not so much to theoretical.

The Need for Systematic Study of Individual Characteristics as Manifested by the Organism's Reaction to Stimuli.—Dr. William K. Walker, of Dixmont, took this for his subject, in which he urged the importance of the individual study of each case, particularly the chemical and physical phenomena of nutrition and the vasomotor and secretory conditions.

Indicanuria Complicating Typhoid Fever.—Dr. Judson Dalland, of Philadelphia, referred to the various tests, and recommended modifications by which more accurate and uniform results could be obtained. He referred to the frequent association of the absorption of products of putrefaction in the intestines, with indicanuria, and dwelt upon its frequency in typhoid fever, based upon observations covering almost a decade. When this condition is present he strongly urged antisepsis of the mouth and persistent local treatment of any morbid condition of the nasopharynx and sinuses, believing that abnormal secretions from these regions, when mixed with food, especially milk, causes rapid decomposition and fermentation. He advised calomel, phosphate of sodium and the free use of pure water, occasionally alternating with vichy, and strict adherence to a peptonized milk diet, with the administration of broths twice daily. As a preparatory treatment, while the gastro-intestinal tract is being cleared of its contents, he recommends the exclusive use of animal broths, and when the indicanuria still persists, colonic irrigation, with one or two quarts of warm normal solution, introduced by means of a long, soft rubber tube. When ulceration is active, or there is any reason for believing that hemorrhage may take place, this treatment should be omitted; and, as a rule, he recommends its omission during the third week, unless toxic symptoms are serious.

SECOND DAY—SEPTEMBER 28.

Section B.

Progress in Treatment of Skin Diseases.—Dr. John R. McCurdy, of Pittsburg, reviewed the various remedies that had been employed, and stated that up until the middle of the nineteenth century there seemed to have been but little scientific investigation in the field of dermatology. He referred to the Roentgen rays and the Finsen light treatment, which he stated were yet in their infancy, and, in conclusion, urged a more scientific study and treatment of these conditions.

Treatment of Skin and Glandular Diseases by X-Ray.—Dr. Russell H. Boggs, of Pittsburg, said (1) technic is largely responsible for both successful and unsuccessful results; (2) in the treatment of lupus, epithelioma, carcinoma, acne, eczema and tuberculosis, the X-ray is an excellent remedy; and (3) in most cases of carcinoma the combination of X-ray and surgery offers the best chances of recovery. He dwelt particularly upon the importance of dosage and the persistence of the treatment after the apparent termination of the disease, and reported the result of twenty-seven cases of lupus-vulgaris, two cases of lupus erythematosis, thirteen cases of primary epithelioma, and several cases of acne, chronic eczema and birthmarks.

Roentgen Rays and Radium Therapy.—Dr. Mihran K. Kassabian, of Philadelphia, said that after conducting a series of experiments at the Philadelphia Hospital, to determine the comparative value of the two agents, in some cases using them on different parts of the same growth, he had discovered that the radium produced little or no effect, and had therefore discarded it for the Roentgen rays. Epitheliomata, he stated were the most satisfactory cases; and in carcinoma it was recommended that operation precede the application of the rays. Twenty cases of chronic senile leg ulcer, some of which have entirely healed and all improved, were reported, as were also fifteen epileptic cases of the insane department of the Philadelphia Hospital, in which the frequency and severity of the attacks had lessened under the Roentgen-ray treatment. He illustrated his paper by numerous photographs and lantern slides.

The Treatment of Malignant Diseases of the Breast.—Dr. Charles Lester Leonard, of Philadelphia, and (1) that our knowledge of the etiology and pathology of the disease is very limited; (2) the natural benignity of atrophi scirrhus is apparently

explained by certain pathologic changes that show an attempt by nature to retard the progress of the disease; (3) the results produced by Roentgen treatment are practically identical with this natural process, but are more complete, showing a power over the malignant cells themselves; (4) conservative surgery tends toward a non-operative treatment of hard cancers (atrophic scirrhus) and their treatment by X-rays; (5) early radical removal by surgical operations is indicated in all other primary growths and operative recurrences to be followed by early Roentgen treatment, the value of which, however, depends upon the skill and experience of the operator.

Inhibitory Action of X-Ray Upon Malignant Growths.—Dr. George C. Johnson, of Pittsburg, said (1) the radiation from an excited Crookes tube is capable, when properly applied, of inhibiting malignant growths, that such inhibition is dependent upon the skill and experience of the operator, and may be complete and permanent as to produce a clinical cure. It may be applied as a palliative remedy in inoperable cases, and in cases unfit for operation it may be used as a tonic treatment, and is also of great value as a postoperative measure; but the employment should be confined to the hands of competent physicians and surgeons experienced therein.

Knee Anchylosis.—Dr. DeForest Willard, of Philadelphia, stated that it was a condition, the result of a disease and not a disease itself, and may result from many different pathological conditions. He remarked that the discovery of the cause was all-important, as the determination as to the treatment to be pursued after the joint has become fixed must depend, first, upon the cause, and, second, upon present joint conditions as discovered by careful clinical examinations, aided by X-rays. The author outlined the appropriate treatment for anchylosis following gonorrheal infection, septic infection, tuberculous disease, or with suppuration, and cited as the accidents most liable to result from forcible straightening, fracture, posterior dislocation and aneurism.

Modern Methods for Combating Deformity in Spinal Caries.—Dr. David Silver, of Pittsburg, said that the complicated nature of the spine rendered treatment of deformity difficult. Traction by suspension, as a means for correcting the deformity and placing the spine in the proper position for fixation is deficient because (1) it does not separate the diseased vertebral bodies, and so does not abolish the traumatism from weight-bearing and functional uses; (2) the force is largely expended upon the secondary curves, the kyphosis being slightly modified; (3) a large part of the good effect is lost unless traction is made continuous by means of a head support. Similar objections apply to recumbency on a flat surface. Hyperextension he considered the best method and the best procedure for obtaining correction and for the routine application of the jacket of the Metzger-Goldthwaite frame.

The Relationship of the Femur to the Pelvis.—Dr. Stewart L. McCurdy, of Pittsburg, said that the transpelvic lines crossing the pubic spines will cross the trochanteric eminences in children, and above the same point in adults, and when the trochanter is found above this line, displacement from some cause is always present. Disregarding the pubic spines, two lines may cross the pelvis, one through the anterior superior spines and a second through the trochanteric eminences. If these lines are not parallel, then the displacement exists on the side on which the lines converge or are closer.

Section A.

Drugs vs. Other Methods of Treatment.—Dr. T. W. Grayson, of Pittsburg, treated of the present tendency among physicians to give more and more attention to the use of diet, electricity, massage, baths, hygienic measures, ventilation, rest, and active or passive exercise in the treatment of disease, and not to depend so exclusively as formerly on drugs alone. Text books show this, and it is illustrated when one considers how in the past few decades much besides drugs has come into use in the treatment of tuberculosis, gastro-intestinal diseases, malaria, rheumatism and typhoid fever. The author did not wish to be classed among the "therapeutic nihilists," but emphasized his thought that often a certain drug may suit the case quite well, but a better remedy is found in correction of faulty habit or in the use of hygienic measures much harder for the physician to find and prescribe, and more troublesome to the patient to use than in a bottle of medicine or a few tablets.

Asthma—Its Varieties and Treatment.—Dr. Solomon Solis Cohen said that no condition exhibits so many individual peculiarities as asthma, and that in none must the physician have more strings to his therapeutic bow. Asthma he declared to be a group of symptoms and not an independent disease. The diagnosis was therefore incomplete until the underlying affection giving rise to the symptom group is discovered. On the other hand, when definite lesions in the heart and kidneys exist and so-called cardiac and uremic asthma supervene the condition is not usually pure asthma, but dyspnea dependent upon heart failure, sometimes, it is true, aggravated by the presence of uremic toxines. True asthma presents clinically four varieties: (1) Asthma dependent upon vasomotor ataxia; (2) asthma dependent upon bronchial spasm, muscular, and perhaps vascular; (3) asthma associated with chronic bronchitis and emphysema; (4) asthma associated with nasal turgesence and sometimes with polypi and other mechanical obstructions, or with enlarged glands and other sources of irritation in the nose nasopharynx. While these divisions are not pathological divisions and are not coordinate, Dr. Cohen regarded them as useful working rules. In treatment asthma dependent upon vasomotor ataxia is to be prevented by constitutional measures, diet, hygiene, hydrotherapy, exercise, massage and the like, and the administration of such remedies as barium chloride, picrotoxin, ergot, atropine, suprarenal gland, strychnine and measures which raise vascular tone. Exciting causes are to be avoided. For the relief of paroxysms he suggested suprarenal spray or inhalation, or if necessary hypodermic injection. Narcotic asthma powders may be used, but not continued. Nauseant expectorants are useful in spasmodic asthma. The speaker gave the conditions in which choice should be made of the different agents.

Dr. G. Hudson Makuen reported a case of nasopharyngeal irritation as a cause of asthmatic breathing relieved by operation.

The Diagnosis of Major Hysteria.—Dr. Theodore Diller, of Pittsburg, in this paper emphasized the diagnostic importance of the condition, and said that among the failures to recognize it are the too limited conceptions of its manifestations, a too great insistence upon crying and laughing spells or convulsions as expressions of the affection; the failure to recognize that the symptoms may change little and persist for years, and that the disease may be

thoroughly chronic; the failure to recognize the disease is not rare in men and rather common in children, and the failure to recognize the great diagnostic value of sensory changes. A clear recognition of hysteria and a definite and positive statement to patient and friends that the disease is well understood constitutes the first step in treatment. Dr. Diller believed that in damage cases great injustice is done the sufferer from major hysteria by the jury, who regards it as a trifling matter or a species of fraud.

Dr. Mayer, of Pittsburg, agreed with the author when he said that hysteria is a mental disease akin to insanity, and believed that physicians are often prone to forget that the hysterical symptoms are due to a primary mental condition, that there is a congenital psychosis inherited in the individual.

Amnesia.—Dr. C. C. Hersman, of Pittsburg, in this paper reported the following clinical case: A man, aged forty, left his home in 1892 without cause. He thought he was going to the Atlantic Coast, but went to Cleveland. Returned in four days and wanted to start for his home in Austria. He was treated in a hospital for two weeks and at his home for three or four weeks. Complete recovery. In 1903 he left the city, not knowing where he went. Does not know where he first came to himself. He left Boston for Jamaica. He was under different names, which condition he thought was imperative. He felt as though he was undergoing a transformation, and that all his past was blotted out. A part of the time he thought he was dead and could not understand himself. He returned in six months, placed himself under treatment and again made a complete recovery.

Lax Sanitation—The Cost of It.—Dr. S. P. Heilman, of Heilman Dale, in this paper made a plea for a more united effort to secure legislation which shall prevent laxity in applying those sanitary precautions and safeguards to which the public is entitled. He quoted statistics showing the enormous loss to the States of New York and Pennsylvania by deaths from preventable diseases. Dr. Heilman came as a representative of the Society of the Associated Health Authorites and Sanitarians of Pennsylvania, and stated that at the last meeting two propositions were made: (1) That the Medical Society of the State of Pennsylvania should be asked, along with other societies, to unite with that Society in drafting a bill for the registration of vital statistics of the State, because upon that is based a true system for the exact determination of the health of the community; (2) that this Society shall lend its influence to the enactment of laws which shall provide for a county health officer, and a deputy township health officer, who shall be under the instruction and direction of the State Board of Health, to supervise sanitary affairs of every township, independent of any local influence.

(To be Continued.)

BOOK REVIEWS.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D.; Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Volume 3. Translated and Edited by William T. Bull, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York, and John B. Solley, M.D., New York Surgery of the Extremities. Lea Brothers & Company, New York and Philadelphia.

The third volume of this important work follows close on the heels of its predecessors, and fully equals, if it does not surpass, them in value and interest. The list of contributors includes men of the highest rank in the several branches of surgery to which they have devoted themselves, and the sections they have prepared for this magnificent system contain the very essence of their manifold experiences and labors. The present volume is devoted to the extremities, and the surgery of these regions is elaborated with the greatest possible attention to detail. The minutiæ of treatment are given with a fulness adapted to the needs of the least experienced, while the thoroughly modern nature of the methods advised, the pathological discussions and the wealth of statistical information make the volume of much interest and value to the operating surgeon. The sections on the shoulder and upper arm are by Schreiber and Hofmeister, those on the elbow and forearm by Wilms, while the wrist and hand are discussed by Friedrich. Hoffa's section on the hip and thigh is especially interesting, and contains a valuable discussion of the various methods for the treatment of congenital dislocation of the hip. Of the bloodless procedures, he prefers a combination of the Lorenz with the Mikulicz method, and in certain cases advises open operation, with reduction of the head into the enlarged old cavity. The knee and the leg have been allotted to Reichel, and the ankle and foot to Nasse and Borchardt.

The essentially practical nature of the work has been pointed out in the reviews of the previous volumes, and the frequency with which surgical conditions affecting the limbs come under the care of the practitioner makes this volume particularly valuable for every-day consultation. The regional plan of classification customary in Continental books has much to commend it, and in this instance it has been carried out so systematically as to make reference to any particular subject very easy.

The American editors have added many illustrations to those of the German original, and the interpolated notes serve to bring the text fully into harmony with cis-Atlantic practice.

Atlas und Grundriss der Lehre von der Augenoperation. Von Prof. Dr. O. Haab, in Zurich. J. F. Lehmann, München.

This is the third volume of the series by the same author comprising "The External Diseases of the Eye," "Ophthalmoscopy," and "Operations on the Eye."

The first two books are sufficiently well known, and the third is of equal excellence. The author writes as if the task were a congenial one. He is a teacher of rare gifts, and the descriptions of operations are vivid and clear to a degree. The directions are never stereotyped, but practical and of a simplicity of language to impress the memory. Many of the more modern procedures are described, some of which are not yet firmly established; others which are accessible here are of much interest, such as the introduction of iodoform into the anterior chamber, and an elaborate and authoritative chapter on the use of the large magnet. It is natural that one misses certain familiar operations. The book is not exhaustive, as Czermak's great book will be, if it is ever finished, but the failure to mention de Wecker's scissors in the treatment of secondary cataract would seem to be an oversight.

The illustrations need more than a passing comment. The work of the artist was well shown in "External Diseases," and here the same precision and excellence of technic is apparent, and the subject seems better adapted to realistic delineation than do the variable appearances of disease.

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ORIGINAL ARTICLES.

THE EARLY PHYSICAL SIGNS OF PULMONARY TUBERCULOSIS.[1]

BY LAWRASON BROWN. M.D.,
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WHEN discussing the early physical signs of pulmonary tuberculosis, there are several facts that should be kept in mind. In the first place, early physical signs do not necessarily mean that the disease is in an incipient stage, and in the second place it is still an open question how deep one can explore the lungs by percussion and auscultation. Many authorities hold that extensive changes can occur in the lung structure with few or no physical signs on auscultation or percussion.

It has, moreover, been frequently pointed out that no tubercle bacilli are found in the sputum until ulceration has taken place. I have found that as soon as ulceration occurs, or as soon as tubercle bacilli are found in the sputum, the chances for recovery are considerably lessened.[1] When tubercle bacilli occur in the sputum, the disease in one sense is no longer incipient. The term "incipient," in this paper, is applied to those cases with slight local and little or no constitutional involvement. It should be added that of these cases only those with a favorable prognosis are as a rule admitted to the Adirondack Cottage Sanitarium. In the 201 incipient cases discussed in this paper, tubercle bacilli occurred in the sputum of 71 (35 per cent.). One hundred and seven cases had a lesion on one side only and of these 34 (32 per cent.) had tubercle bacilli. Of the remaining 94 cases in which there were lesions on both sides, tubercle bacilli occurred in 37 (39 per cent.).

Every effort should be made to make the diagnosis before ulceration has begun, and in many cases the physical signs are of great help, but the fact should be emphasized that absence of physical signs is not conclusive proof that the lungs are normal. In many cases the diagnosis must depend upon the symptoms, and in cases with symptoms of pulmonary tuberculosis very slight changes from normal in the physical signs are of great importance. The "closed lesions" of the Germans are not rare, and the diagnosis must in many of these cases rest upon the symptoms and physical signs. In a recent case at the Adirondack Cottage Sanitarium, the patient had marked physical signs with a great quantity of sputum, yet Dr. Twichell examined twenty-six specimens on as many days before tubercle bacilli were found. They were then numerous until his death, which occurred in about three weeks. Considerable time may elapse after the onset before physical signs appear. In 192 incipient cases the time of onset was from three weeks to ten years before admission. In 111 cases (58 per cent.) the patient did not apply for admission during the first six months of his illness.

Method of Examination.—The relative value of the information obtained by the various methods employed in physical diagnosis is not fully appreciated, or at least stated by all observers. The classical method of making the examination, *i.e.*, by inspection, palpation, percussion, auscultation, mensuration and radioscopy, is often overemphasized in some details and in some cases receives too rigorous adherence. I am speaking in regard to incipient pulmonary tuberculosis only, where I have found the following method gave me on the whole the best results:

The patient should be stripped to the waist and covered with a chest cloth or blanket. He should stand, if possible, or if too weak, be seated on a revolving stool. Recently I have thought that I had obtained better results from percussion when a patient stood in a corner or near a wall, instead of in the middle of the room, on account of the reinforcement of the sound. The chest should be carefully inspected anteriorly, laterally, posteriorly and from above on quiet breathing. Palpation should next be practised, but quiet breathing only should be employed. Percussion should be made while the patient is breathing quietly. When one has finished auscultating the patient may be made to breathe deeply to determine, if necessary, whether limitation of movement is present on either side above or below. I rarely find this necessary in the cases I see, as quiet breathing usually gives me the information desired. Percussion, too, after a full breath can now be practised and the girth and index of the chest be determined, as well as the movement of the bases of the lungs by percussion and radioscopy.

INSPECTION.

The chest should be bared to the waist and the patient placed in a strong light, preferably falling diagonally across his chest. As the data obtained by inspection are closely connected with those based on mensuration, both will be discussed at this time.

General Conformity of Chest.—The general conformity of the chest in incipient pulmonary tuberculosis varies but little from the normal. A considerable number of cases have strikingly well-formed chests, better developed in many

[1] Read before the Laennec Society of the Johns Hopkins Hospital, May 25, 1904.

instances than the average healthy chest. In 83 out of 193 incipient cases the chest was well formed. In 48 cases it was not well formed; and in the remaining 62 cases some asymmetry or slight deformity was present, though the chest on the whole was fairly well formed. The chest index, the ratio of the anteroposterior diameter to the transverse diameter at the nipple level, may in health be stated to be about 75. In 157 incipient cases of pulmonary tuberculosis the index was 74, practically normal. The ratio of the length of the chest to the height in 540 males measured by Dr. Sargent at Harvard was 19.1. The same proportion in the Adirondack Cottage Sanitarium cases show 19.9, and this in spite of the fact that the heights in the latter are inclusive of shoes. The chest then in incipient pulmonary tuberculosis may be said to be longer than normal.

The Thoracic Perimeter.—The circumferences of the chest on forced inspiration and forced expiration should, it is said, be together at least equal to the height. As our cases have been measured in their shoes, 2.5 centimeters have been allowed for error in men and 3 centimeters in women. In 80 men the two circumferences exceeded the height in 44 cases (55 per cent.) and were less than the height in 36 cases (45 per cent.). In 95 women in 20 (21 per cent.) they exceeded the height, in 75 (79 per cent.) were less than the height. A striking difference between the male and female cases is seen in these figures. It suggests that the perimeter has been calculated only for the male. (In 175 cases the perimeter exceeded the height in 37 per cent., was less than the height in 63 per cent.) A number of immature chests, however, are included in these figures.

Angulus Ludovici.—The prominence of Louis' angle does not seem to be much reduced in incipient cases. The angle has not been measured by a goniometer, and its prominence may therefore be due in some cases to the pyriform exostoses of the second costal cartilages, to which Rothschild has called attention. This author thinks Louis' angle much reduced or obliterated in pulmonary tuberculosis.

The intercostal spaces vary little from normal in early cases. The intercostal angle, as measured by the eye, was normal in 33 out of 45 incipient cases and narrowed in 12.

Asymmetry.—In truly incipient pulmonary tuberculosis the chest shows little if any deformity. Before basing any conclusions on asymmetry of the chest, all previous possible causes of such deformity should be excluded; for example: occupation, pneumonia, pleurisy, etc. The earliest form of asymmetry is probably manifested by the prominence of one clavicle. Out of 169 incipient cases one clavicle was more prominent in 107 (63 per cent.) and equal in 62 (37 per cent.). Of 88 cases with a definite lesion on one side, in 45 the clavicle was prominent on the affected side, in nine prominent on the opposite side, and in 34 cases the clavicles were equal. In 156 out of 193 cases no flattening of the chest on one side was noted on inspection. In 100 cases with a lesion on one side only 19 showed some flattening, in part at least, due to atrophy of pectoral muscle, which in 12 agreed with the lesion, and in seven occurred on the opposite side. The figures would seem to indicate that the right side is normally more prominent than the left. (In 11 "right-sided lesions" with asymmetry, depression occurred on the right in five, on the left in six. In eight "left-sided lesions" seven occurred on left, one on right.)

In 95 incipient cases with a lesion on one side the diameter from the nipple to the vertebral spine on the same level was noted. This showed that in 30 cases the affected side had a smaller diameter; in 34 cases the diameters were equal, and in 31 cases the diameter was less on the unaffected side. The figures, however, seem to indicate that the right diameter is normally larger than the left, but the diameters are somewhat affected by the lesions. [In 53 cases with a lesion on the right side, the right diameter was smaller in 12 cases (23 per cent.), larger in 26 cases (49 per cent.), equal in 15 cases (28 per cent.) In 42 cases with a lesion on the left side, the left diameter was smaller in 18 cases (43 per cent.), larger in five (12 per cent.), and equal in 19 (45 per cent.)].

In 193 cases there was one case with a funnel chest, one pigeon-breasted and one phthinoid. In five cases the sternum was prominent, in ten depressed, and in one prominent above and depressed below.

Scoliosis.—Slight scoliosis was noted in 22 out of 103 cases. The convexity was to the right in twelve cases (six with a lesion on right side, six on left); in ten it was to the left (eight with a lesion on the right side and two on the left).

Varices.—Attention has been called to the occurrence of varices on the affected side. They are frequently to be noted, but do not seem to me in early cases to occur sufficiently often on one side to warrant any conclusions.

Difference in Size of Pupils.—In 181 incipient cases, 15 had a difference in the size of the pupils. Of eight cases with a lesion on one side only, six showed an enlargement of the pupil on the affected side, two on the unaffected side. Of the seven cases with both sides affected, in three the pupil was larger on the side with the more trouble, in two the pupil was larger on the less affected side, and in two both sides were equally affected, but the right pupil was larger than the left. In the fifteen cases the right pupil was larger in twelve, the left in three (one had the lesion on the left, one on right, one on both—more on right). Little information can be obtained from the difference in size of the pupils in early cases of pulmonary tuberculosis.

Larynx.—In five cases out of 197 examined, one vocal cord moved less than the other. In two cases the limitation of movement was on the

affected side, in three on the opposite. This was the only abnormality noted in the laryngeal examination in these cases, which, however, presented no laryngeal symptoms.

Movement of the Chest.—In 101 cases with a lesion on one side, the movement by inspection and palpation was restricted on the affected side in 53, on the opposite side in 24; on both sides equally in two and was equal in 21. In one case the movement on the affected side was greater but the side lagged. I have thought it would be of interest to compare the movement of the two sides, as obtained by inspection, percussion of the bases and radioscopy of the diaphragm. Twenty-two cases have been examined. In three cases inspection showed the movement equal. In 15 the movement was restricted, on the affected side in 10, on the unaffected in five. Four cases had lesions on both sides. Of the 10 cases with the movement noted by inspection as limited on the affected side, in five percussion of the bases and radioscopy of the diaphragm coincided. In eight cases of these 10 inspection and percussion showed limitations of movement on the affected side.

In seven cases radioscopy agreed with inspection. In five cases inspection showed the movement restricted on the unaffected side. In one case percussion and radioscopy coincided with it. In two of these five cases percussion and X-ray showed a restriction of movement on the affected side. In one case percussion showed no difference, while X-ray showed a limitation on the affected side. In the remaining case X-ray showed a limitation on the affected side, percussion on the unaffected side. Inspection showed no difference in movement in three cases, in two of which both percussion and X-ray indicated a limitation of movement on the affected side. The remaining case had a limitation of movement on the affected side by percussion, on the unaffected side by X-ray. From these figures it is seen that inspection showed a limitation of movement on the affected side in 55 per cent., percussion in 72 per cent. and radioscopy in 72 per cent.

For some time past I have had my attention called to the fact that when the movement was restricted at the apex it was often exaggerated at the base. This is easily made out by inspection and palpation. When the movement is equal, or nearly so, I always carefully examine the bases to see if I get more movement on the affected side. In 12 incipient cases with a lesion on one apex, I noted in nine that the movement, while restricted at the affected apex, was exaggerated at the base. In three cases the site was doubtful, but the phenomenon occurred on the side supposed to be unaffected. It was noted in five cases with lesions on both sides. I would like, however, to call attention to the fact that in all these 17 cases, the phenomenon occurred upon the right side. I have observed the same phenomenon in many advanced cases.

I regret that I have not recorded separately the relative movement of the two shoulders and would add that the observations of movement were made over the infra-clavicular fossæ and over the infra-axillary regions.

Spirometry has not yielded information of sufficient value in early pulmonary tuberculosis to encourage us to make a study of it. I cannot but believe that in some cases it may be decidedly dangerous.

PALPATION.

Palpation has seemed to me to be of little value in these cases, except as an aid in determining limitation of movement. Increased normally on the right side it is difficult to detect a slight increase of the vocal fremitus if the lesion is at the right apex. When the lesion is at the left apex the vocal fremitus may be of more value. If it is equal on both sides it is probably increased on the left. In 94 cases with a lesion on one side the palpation was normal in 64, greater on the affected side in 23, and on the unaffected in seven (six on the left side).

PERCUSSION.

In many early cases little or no information can be gained by percussion as ordinarily practised. The note is unchanged and the same on both sides. When the involvement of pulmonary tissue necessary to produce any change in the percussion note is considered the absence of dulness in the incipient stage is not to be wondered at. Cornet[2] has stated that in general to produce any change in the percussion the area of disease must have reached an extent of four to six square centimeters and a depth of two centimeters. Alison[3] held that the air capacity of the lung must be reduced one-third to produce any change in the percussion note, and one-half to produce dulness. This would explain why a small lesion can be more easily detected by percussion at the apex than elsewhere. The note obtained on percussion can in many cases be analyzed in regard to loudness, duration and pitch. In some cases the first change to be noted is a shortening of the duration, though in many cases it is already accompanied by a rise in the pitch and a diminution of the loudness. Occasionally emphysematous changes occur which mask the dulness, and even in some quite advanced cases little or no dulness can be obtained. This change is no doubt the cause of the relative slight dulness at times detected on the apparently unaffected side.

With a bared chest the patient should stand in a corner or near a wall with his arms hanging loosely by his sides and his head straight. I have found it best to begin with immediate percussion of the clavicle. Care should be taken to strike the clavicles at the same distance from the extremities and at the same angle relatively to a horizontal plane, otherwise a slight difference in note may mislead one. The remainder of the two sides is then compared and often when per-

cussing one side I find it well to go from the resonant parts below to the suspected apex.

I have recently thought that by standing behind the patient, who faces a wall, and percussing the apex I could get better results. To be more explicit, I place the palm of my hand over the suprascapular area and bend my middle finger until it lies firmly against the skin in the supraclavicular fossa. By this procedure one, so to speak, grasps the apex of the lung. Percussion is made on the distal phalangeal joint. Whether it will prove of value to others I cannot say, but it enables me to get the plessimeter finger into more nearly the same position on both sides and allows the finger to lie closely upon the part to be percussed. When examining the back I find it always of value to make the patient cross his arms, putting his hands on his opposite shoulders and bringing his elbows together. His muscles should be relaxed, his shoulders dropped and his body bent slightly forward. This is practically one of the positions recommended by Dr. Corson in 1859.

In many cases on careful percussion a slight change in note is detected at the level of the second rib. If we percuss from below upwards, at this level, the note becomes slightly higher in pitch and possibly a little shorter. I have not found this to be pathological, but have attributed it to the increased thickness of the pectorals in these areas.

The note at the right apex, especially just below the clavicle, is said to be slightly higher in pitch than that at the left. I have found this in a few cases, but in these it caused no confusion. It is well, however, to begin percussion on the left side. In left-handed patients this relative dulness is usually reversed.

In 28 cases out of 201 percussion was negative, while auscultation revealed some abnormal signs.

In 107 cases with a lesion on one side, 25 cases were normal on percussion; five exhibited slight dulness on the opposite side; and in one case the note at both apices was hyperresonant. In the remaining 76 cases the change in the percussion note occurred at the apex in 73, 37 in front, 12 behind and 24 both in front and behind. In 12 cases the change occurred only above the clavicle.

In 16 cases there were slight differences on percussion without any accompanying auscultatory signs. In three cases there were no abnormal physical signs on auscultation. In the remaining 13, auscultation revealed some change on the opposite side.

In 1889 Krönig[4] published in the *Berliner klinische Wochenschrift* a description of a new method of percussing the apices. The height of the apices above the shoulder girdle has often been discussed, and I believe that it is not generally agreed that they always rise to the same level. Krönig has applied to the apex the same method of percussion and the inductions from it that we ordinarily apply to the heart. A slight change of the position of the cardiac dulness does not mean to us what a change in the area does. Krönig marks out the part of the lung lying above the clavicle and scapula on each side and compares the size of the resonant areas. A slight change in position does not necessarily imply disease, but a contraction, a shrinking of the area of resonance on one side is very suggestive. To map out this area very light percussion should as a rule be used. When the disease becomes arrested early, vicarious emphysema has been stated to obliterate any change that had existed in this area. The supraclavicular fossa, if closely observed, is at times seen to retract during inspiration, but usually only in advanced cases. In early cases, as Senator points out, the apex of the lung usually rises slightly (about one-quarter inch) as shown by percussion. Lack of sharp definition in this area of resonance on the affected side is also a point of value.

Auld's[5] method for percussion of the resonant area above the clavicle will never, I believe, come into general use and lacks the direct simplicity of Krönig's.

Percussion I have found to be of value in determining the movement of the bases of the lungs. It has given me better results than Litten's sign, possibly because I am insufficiently practised in the latter method. I instruct the patient while standing to put his hand on the back of his neck and to raise his upper arm until it is perpendicular or as nearly so as he can make it. I explain to him what I am about to do and then determine the lower limits of the lungs in the anterior or midaxillary line on deep inspiration and full expiration. The amount of movement may increase after several deep breaths. To determine the value of this procedure I have examined 41 cases in this manner and compared the movement with that of the diaphragm as determined by radioscopy. In three cases the location of the disease was questioned and in six a lesion existed on both sides. Deducting these we have 32 cases in which the lesion was on one side only. Of these 32 cases, in 20 the movement was shown to be limited on the same side both by percussion and X-ray. In 17 cases the limitation was on the side supposed to be affected and corresponded with the other physical findings. In three cases the limitation was on the side presumably unaffected. One of these cases had marked scoliosis with the concavity on the left side, which was apparently normal but had restricted movement. The second case had only a slight pleurisy at the left infra-axillary region. The third case was that of a medical student with the lesion at the right base and possibly the left.

In 12 cases the findings by radioscopy and percussion differed. Of these the movement on percussion was equal in two, while the X-ray showed marked limitation on the affected side. In two cases the lower limits on the left could not be satisfactorily determined on account of the stomach tympany, while the X-ray showed the

diaphragmatic movement limited on the affected side. In two cases the X-ray showed the movement to be practically equal (one-fourth centimeter difference), while percussion showed the movement limited on the affected side. In one case the movement was practically equal by both X-ray and percussion (one-fourth centimeter less movement on the affected side by percussion). The breast obscured the diaphragmatic movement in one case, which percussion showed to be limited on the affected side. In the remaining four cases the results obtained by percussion were correct in two and wrong in two, in which latter the X-ray was right in regard to the side affected.

Twenty-two of these cases were incipient. Four have to be excluded, as the location of the disease was not determined in one and disease occurred on both sides in three. Of the remaining 18 cases both percussion and X-ray showed in one case a limitation of movement on the apparently normal side. In 14 cases (82 per cent.) percussion showed a limitation of movement on the affected side. In the remaining three cases percussion showed equal movement in two, both of which seemed to be deep-seated lesions. The X-ray showed limitations of movement on the affected side in all three of these cases, but failed to show it on the suspected side in four cases in which percussion demonstrated it.

From the little experience I have had with this method of determining the relative movement of the diaphragm on the two sides by percussion, I am led to believe it may prove of considerable value as one of the links in the diagnostic chain in early pulmonary tuberculosis. In cases with central lesions I think it is less useful, and in these radioscopy still seems to be our most valuable aid. How soon after meals a patient should be examined is also a point to be settled, as I can conceive that a large meal might retard the movement of the diaphragm on the left, possibly on both sides.

The X-ray examinations were made with the patient standing about 18 inches from the tube, which was on a level with the fourth costal cartilages.

A cracked pot note is occasionally obtained in incipient cases (in one out of 201), due to the elasticity of the chest. It usually occurs in the subclavicular fossa.

I have not noted in any of these incipient cases any increase of resistance to the plessimeter finger. Auscultatory percussion is not, as far as I am aware, of any assistance in very early cases. My attention has recently been called to the "Tastpercussion" of Ebstein,[6] but I have not had an opportunity to put it to the test in any of these cases.

AUSCULTATION.

There is a great temptation when dealing with incipient pulmonary tuberculosis to begin the examination with auscultation, as it undoubtedly yields the earliest and most trustworthy information. Inasmuch as the disease begins most often at the apices it is well to commence each manoeuver at one of these points.. The whole chest should be gone over with the stethoscope on quiet breathing. I find it then convenient to examine the vocal resonance, paying especial attention to the whispered voice sounds. The chest should then be examined during a full inspiration after coughing. It is often necessary to explain to the patient how to cough and how to breath to bring out well any adventitious sounds.

The differences between the two sides of the chest on auscultation have been mentioned so often that it is only necessary in this paper to recall the fact to dismiss it. It should be noted, however, that while most observers hold that the excess of natural breathing occurs on the right side, Alison,[3] from observation on about 100 boys, girls and young females, found it increased on the left in 10 and equal in the others.

The first change to be detected on auscultation, and in fact the very first abnormal physical sign in pulmonary tuberculosis, relates to the vesicular murmur. Changes may occur in the quality of this murmur, in the relative duration of its two parts (inspiration and expiration) or in its continuity and equality. The first change to be detected is often some harshness and increased loudness of the vesicular murmur. This in most cases is an increase of loudness or elevation of the expiratory murmur,—prolonged, high-pitched expiration. Grancher[6] held that the earliest change is a low, rough inspiratory murmur, which if sharply defined at one apex is very significant. Wavy breathing precedes weakened breathing, which probably occurs only when the area of infiltration has reached some size.

Vesicular Murmur.—A change in the vesicular murmur is often the only variation from normal found on auscultation. In many cases the vesicular murmur on quiet breathing is very distant or weak. However, this may be due to an improper manner of breathing and not to pathological changes. The patient should be directed to take a full deep breath and the chest should be auscultated with the naked ear as well as with the stethoscope. A series of short, quick inspirations often aid in the examination. When loss of vesicular murmur is detected at both apices the patient should be made to breathe noiselessly through his mouth. This in some cases will enable a good vesicular murmur to be heard. Some deficiency in vesicular murmur was noted in 82 cases. Of 107 cases with a lesion on one side, 39 had some loss of vesicular murmur; of 94 with a lesion on both sides in 43 there was some deficiency in vesicular murmur.

Prolongation of Expiration.—The first change to be detected by auscultation in some cases is a prolongation of the expiration, often slightly raised in pitch. In 107 incipient cases with a lesion on one side the breathing was normal in 26. In the remaining 81 cases prolonged ex-

piration was present in 29, being the only auscultatory sign in six. When lesions occurred on both sides (94 cases) prolonged expiration was present on one side in 29 cases, on both in eight.

Wavy Breathing.—Dr. Jackson[7] in 1833 first called attention to the fact that in some pulmonary diseases the vesicular murmur is not continuous, but, as Dr. Thompson[3] has called it, "wavy," an adjective since widely used to designate this change in the vesicular murmur. In some pronounced cases the breathing is not heard for a time, only to reappear and disappear several times in a single respiratory act. This has been termed cog-wheel or jerky breathing. The wavy quality occurs chiefly during inspiration, but at times may be heard in expiration. Wavy or cog-wheel breathing has not occurred often in our early cases, where the lesion is situated at the apex. Wavy breathing may be due to the forced inspirations and heard only when such are taken. Under these circumstances it has no significance. When confined to one apex, however, it is very suggestive, and a patient with it should always be looked upon with suspicion. Wavy breathing over both sides is quite frequent in nervous patients and is no indication of disease. I have frequently noted it at the base behind, especially on the left side. It was present in nine of the 201 cases, seven on the left, two on the right. In three of these cases a lesion developed later at the site of the wavy breathing.

In many cases, however, no further change has ever taken place, and the "wavy breathing" was in some cases undoubtedly a cardiorespiratory murmur. One case in particular led me astray some two years ago. A young woman, extremely nervous, was sent to Saranac Lake by her cousin, a physician. Her sister had died of pulmonary tuberculosis two or three years previously. She had few symptoms of pulmonary tuberculosis other than those attributable to her nervous condition. On the physical examination it was noted that she had marked exophthalmos, some general enlargement of the thyroid gland and a slight tremor. However, "thinking in tuberculosis," as we have been accused of doing, a marked cog-wheel respiration at the left base led me to believe she had some pulmonary trouble. Dr. Osler fortunately saw the patient and set us—I had some backing in the error—right. She had a cardiorespiratory murmur, six to the respiration, and is now well, married and happy in her "recovery" from pulmonary tuberculosis.

In 201 incipient cases wavy breathing was present at the site of the lesion in 23. In 107 of these cases with a lesion on one side wavy breathing was localized at the site of the lesion in 10. In 94 cases with a lesion on both sides, wavy breathing was present in 13 cases, usually on the less affected side (eight out of 13).

Weakened Breathing.—Weakened or distant breathing at one apex is often a very suggestive sign. It was present in 10 of our cases with a single lesion; in one it was the only abnormal auscultatory sign, and in six the only change to be detected on examination of the respiratory murmur. In 94 cases with a lesion on both sides, the breathing was distant in 10. The weakened breathing in these cases was at the site of the lesion or lesions.

Puerile and Harsh Breathing.—Puerile and harsh breathing have also been rather infrequent in our early cases. I have found puerile breathing frequently on the unaffected side in advanced cases and have come to look upon it as by no means an unfavorable sign. In a small number of incipient cases (four) harsh breathing has accompanied prolonged expiration. In 107 cases with a lesion on one side harsh breathing with some loss of vesicular murmur was present in six; puerile breathing in six. Of 94 cases with a lesion on both sides, harsh or puerile breathing was present in 28 cases. The vesicular murmur was normal in 18 of these, *i.e.* the breathing was puerile.

Vocal Resonance.—The vocal resonance often varies directly with the vocal fremitus, and like the latter is more pronounced on the right. A slight increase on the right is therefore difficult to detect. In 201 incipient cases the vocal resonance was noted as normal, *i.e.*, slightly increased on the right, in 124. In 77 cases it was increased and corresponded with the lesion in every case but one.

Râles.—It is rare in my experience to detect on quiet breathing any adventitious sounds in the lungs in incipient pulmonary tuberculosis. When râles are detected on quiet breathing I usually assume that the case is no longer in the incipient stage, and generally find my assumption to be correct on further examination. Fraenkel,[8] indeed, holds that when any râles are heard the disease is no longer in its incipiency. Râles are in most incipient cases heard only during forced inspiration following cough. They may be moist or dry. Fine and medium moist râles are the two varieties most frequently heard, although occasionally a few sonorous rhonchi may be almost the only physical sign detected.

Quite often a few râles, fine or moderately coarse, are heard after coughing in the infra-axillary region. They may persist for some months after all symptoms have disappeared, and I am not inclined to attach too much importance to them after the diagnosis has been made. Râles in the infra-axillary region were heard in 12 out of 201 incipient cases. In eight of these cases, who have been discharged, the râles had disappeared.

I have occasionally heard a few coarse, moist râles at one apex.

In 107 incipient cases with a lesion on one side the only abnormal physical sign detected in 18 cases were some râles, fine in 13 cases and moist in five. In 48 of the remaining cases râles with other physical signs were present. In two cases the only râles noted were a few rhonchi at the apex-posterior in one, and at the infra-axillary

region in the other. The following figures may enable you to get some idea of the relative frequency with which various kinds of râles have been noted. In 107 cases fine râles occurred in 43, moderately coarse in eight, coarse in one, rhonchi in two, mixed râles in 12. In 94 cases in which there was a lesion on both sides, râles occurred on one side only in 35, on both sides in 39, and in 20 no râles were detected. The relative frequency of the various râles was as follows: Fine, 40 cases; moderately coarse, four; rhonchi, one; mixed, 29.

So in 201 cases, râles were detected in 140.

Muscle Sounds.—Muscle sounds produced in deep inspiration are more frequently heard in the infra-axillary region, though they may occur at the apex behind or at the infraclavicular fossa. These sounds should be kept in mind and investigated in the deep inspiration following cough. Râles in many cases become coarser on coughing and can then be differentiated. But if the sounds occur only during the deep inspiration following cough, a correct diagnosis is more difficult. I well remember the first marked case I saw about four years ago. I thought the patient had fine râles over the entire back on the right, but later discovered that the râles were only muscle sounds.

Pleurisy.—Pleuritic friction has been of rare occurrence in our early cases, possibly because of the apical location. It was noted in only two of the 201 cases. I might say that I have often been impressed with how seldom one hears a friction rub in pulmonary tuberculosis. Even when a patient is suffering from acute pleurisy often no pleuritic friction can be made out for some time.

In regard to the local signs occurring after the tuberculin reaction in incipient cases, they are often conspicuously absent. In some cases I have noticed a few fine râles or a slight loss of vesicular murmur not detected either before or after the reaction.

A systolic murmur occurs below the clavicle more frequently in advanced than in incipient cases. I have heard it occasionally in some of our incipient cases, but it seems to be of slight importance. The heart sounds were transmitted more widely than normal over the chest in two cases.

From the consideration of these cases it is seen that the most common picture obtained by percussion and auscultation is slight dulness above the clavicle with some deficiency of vesicular murmur with or without prolonged expiration, and a few râles, usually fine, during inspiraton following cough.

Site of the Primary Lesions.—In 29 of the 201 cases which have been studied in this paper, it was impossible to determine the starting point, but in 172 cases after much deliberation the first point of attack, as indicated by the physical signs, has in all probability been determined. Of these 172 cases, in 105 the disease started on the right side, in 67 on the left. Of the 105 cases starting on the right side, 102 commenced at the apex, three at the base. Of the 102 cases with an apical origin the abnormal physical signs first appeared anteriorly in 56, posteriorly in 21. Twenty-eight cases began in the supraclavicular, five in the subclavicular fossa. The cases that started on the left side showed practically the same points of origin. In 36 cases it was impossible to decide whether the disease started above or below the clavicle.

CONCLUSIONS.

1. Absence of physical signs in the chest is no better proof that a patient has not pulmonary tuberculosis than absence of tubercle bacilli in the sputum.

2. Tubercle bacilli occurred in the sputum of only 71 (35 per cent.) of 201 incipient cases.

3. Fifty-eight per cent. of these cases did not apply for admission into the Sanitarium within the first six months of illness.

4. Auscultation is by far the most important method of physical exploration in incipient pulmonary tuberculosis. Inspection (including mensuration) and percussion seem to me of nearly equal importance. Palpation is of less value.

5. Auscultation should be practised before the patient is made to breathe deeply, as otherwise fine crepitation may be overlooked.

6. In many incipient cases little or no deformity of the chest exists. In a majority of the cases the chest is well developed, though possibly a trifle long, with a slight prominence of the clavicle on the affected side.

7. The intercostal spaces and angle as well as Louis' angle are in the majority of cases normal.

8. The movement of the chest as noted by inspection is in the majority of cases restricted on the affected side. Restriction of movement on the unaffected side is by no means uncommon.

9. Careful inspection showed a restriction of movement in 10 out of 18 cases, percussion of the bases revealed it in 13, radioscopy in 13.

10. The lower part of the affected side shows in some cases an exaggerated movement on inspection, which may be of value in certain cases.

11. The vocal fremitus was normal in two-thirds of the cases and was three times more apt to be increased on the affected than on the unaffected side.

12. Direct percussion upon the clavicle has not proved of much value in these cases.

13. Some degree of dulness may occur without change in the auscultatory signs.

14. Krönig's method of percussion is of value in the examination of incipient cases.

15. Percussion and radioscopy seem of nearly equal value in determining the movement of the base of the lung. Radioscopy has a distinct advantage in deep-seated lesions; percussion, possibly, in "pleuritic" cases.

16. In 28 out of 201 cases (13.9 per cent.) percussion was negative, while auscultation revealed some pathological signs.

17. Prolonged expiration was present in 32 per cent. (in four per cent. as the only abnormal auscultatory sign).

18. Wavy breathing was present at the site of the lesion in 11 per cent. "Wavy breathing" at the left base may be a cardiorespiratory murmur.

19. Weakened breathing at the site of the lesion was present in 10 per cent. (in one per cent. as the only abnormal auscultatory sign).

20. Puerile breathing was present in 12 per cent., harsh breathing with loss of vesicular murmur in eight per cent.

21. Some deficiency in the vesicular murmur was present in 41 per cent.

22. The vocal resonance was normal in 62 per cent., increased at the site of the lesion in 38 per cent.

23. Râles occurred in 70 per cent. The following order indicates their relative frequency: Fine, medium moist, rhonchi, mixed.

24. Pleuritic friction occurred in but two cases (one per cent.).

25. In these 201 cases the site of the primary lesion was most frequently above the clavicle, then in the suprascapular area and subclavicular fossa. Sixty-one per cent. occurred on the right side.

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ARE THE INSANE RESPONSIBLE FOR CRIMINAL ACTS?[1]

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THE prevalent use of insanity as a shield for crime, renders its medicolegal study of more than passing interest. In view, therefore, of its extreme importance and practical significance, it is somewhat surprising to find the scant attention which it has received in the published transactions of this worthy organization. Moreover, the contributions which have appeared, together with their discussions, have met with no definite mutual agreement, thus leaving the novice in psychiatry to grapple with this momentous question largely unaided by those whose experience and competence enables them to speak with authority.

As one of the younger accessions to your ranks, I trust it will therefore not be construed as presuming on my part to thus attempt to deal with a subject of such acknowledged perplexity, for my purpose is not to assume the rôle of a disgruntled critic, but rather the attitude of an interested student of practical psychiatry, inquiring after truth of those whose opportunities for clinical research and ripened experience qualifies them to impart reliable information and instruction concerning the question at issue.

Whether justified or not, it is my belief that much of the confusion which now prevails relative to medicolegal matters in courts of law, is largely due to the apparent indifference manifested by such specialized organizations as this, to furnish the general medical profession with definite specific knowledge concerning the abstruse problems of which they alone are the only recognized capable exponents. Hence, in every community where insanity becomes a plea for crime, and the question of mental responsibility is referred to the local medical profession, it is very distressing to find the wide difference of opinion that prevails between apparently equally competent medical witnesses, relative to its validity. If, however, this association has any function distinctly its own, it would seem to be the right to decide whether the insane are mentally responsible for criminal acts, and if so, what adequate disposition should be made of them, in order to meet the ends of justice.

That medical men are not agreed at the present time in reference to this matter, is very clear, but it is certainly highly desirable that a consensus of opinion be attained by no less authority than this able body of competent alienists, as to the mental conditions which ought to exonerate a criminal from punishment. In this connection, we are reminded by Judge Emery, of the Supreme Court of Maine, that the science of medicine is the oldest of sciences, that it has attracted to its ranks the best intellects of every age, that its disciples have been distinguished for their zeal, ability and untiring labor, and that in the thousand years of its existence it must have elucidated and established a vast number of truths, which its devotees should be able to state clearly, impartially and accurately in courts of law. Why, then, he asks, do our courts find medical evidence so often unsatisfactory? Lawyers, he claims, understand that medicine is not an exact science, and that the causes and course of disease of both body and mind are hidden from inspection, and often can be only surmised, but these allowances do not, to the lawyer's mind, account for all the faults of medical testimony.

The courts, according to this eminent authority, desire to know, not so much individual, as the consensus of opinion of the entire medical profession. It is assumed by the courts that in the present state of medical science, the medical profession has accepted certain conclusions as correct. Many new theories may be started, and numerous modes of treatment suggested by the few, while the great body of the medical profession refuse to sanction or adopt them. The

[1] Read before the American Psychological Association, St. Louis, Mo., June, 1904.

consensus of medical opinion is, however, what the courts desire, and not individual opinion.

Now, applying this principle to the subject of my theme, I presume no one here will deny the proposition, advanced some time ago by Dr. Mercier,[1] the noted English alienist, viz., "that very few, indeed, of the insane are wholly irresponsible," by which, he says, he means that there are very few indeed of the insane who ought never to be punished for wrongdoing or, to put it as he states, with brutal plainness, "it is, in many cases, right and just to punish an insane person for wrongdoing." This, I admit, is contrary to common belief and legal opinion, for there is a very prevalent notion abroad, which gets expressed from time to time in sentimental expressions of horror and disgust at the very idea of ever punishing an insane man, under any circumstances, or for any act of wrongdoing. It is, however, this universal belief in immunity of punishment, that constitutes the foundation for the plea of irresponsibility for crime, on the ground of insanity.

That total and complete irresponsibility of the insane is the magnetic watchword that insures good care and kind treatment to those unfortunates confined in our State and private insane hospitals, is undoubtedly true, and the theory in itself is a most excellent one when used in its proper sphere, or strict relation, for, as Dr. Wherry[2] aptly states: "It alone has aroused the sympathy of all God's people, for this most unfortunate class, it alone has broken the shackles from a thousand maniacs chained in dungeon cells, it alone has reached out its charitable hand and protected the wards of the State, beside ringing the death-knell of brutality in hospitals for the insane, and giving us kindness, gentleness and brotherly love instead."

Admitting all this, yea, even more; it is nevertheless, according to the writer, a false doctrine, and cannot in fact be substantiated by practical clinical experience with the insane. For the good it has already done, and is still doing, it is well to allow its influence to reign supreme in hospitals for the insane, but it should never be held in courts of law, as the true and correct criterion or standard for justice, in all cases of insanity, as it is contrary to all the facts and evidence furnished by practical clinical psychiatry.

It is at this point, however, where law and medicine come in conflict, both by authority and teaching, for the majesty of the law, as it now stands, declares that no insane person is responsible for his acts, indeed, in a strictly legal sense, there is no such thing as an insane criminal. Concede the insanity of the accused, and he is at once placed outside the ban of law, and not under its punishment. This theory of total and complete irresponsibility of the insane, therefore, corresponds to that form recognized by lawyers as legal insanity, in contradistinction to medical insanity.

The fallacy of this view, however, was ably set forth by Dr. Bancroft[3] in his essay on "Legal and Medical Insanity," which he read to this association in the year 1900. In this he clearly demonstrates how imperfectly insanity is understood by the lawyer as well as the general medical practitioner, and emphasizes the need of a definite consensus of opinion by those most competent to judge relative to its misleading character, both for its educational as well as humanitarian purpose.

To the legal mind, any act in the insane, which in the sane would be criminal, lacks every element of crime. The act is impelled, from this standpoint, by an insane impulse or delusion, which cannot be resisted or controlled; hence it is not the result of any criminal intent. A sane man, however, who has committed a crime, may become insane either before or after conviction for the crime, but the moment this occurs, he is no longer a criminal, but an insane man, and thus free from legal punishment. It would seem, therefore, that Dr. Mercier's claim, viz., that the insane should be punished for wrongdoing, is an open violation of the common law of both England and America. He, however, qualifies this statement by adding that "No insane person ought, for any act, to be punished with the same severity as a sane person ought to be punished for the same act," and he also says "that every institution for the insane is conducted in accordance with this great principle."

That insanity carries with it a certain immunity from punishment all will agree, and there are good sound scientific reasons why this is true, but every alienist of wide experience recognizes that there are degrees of responsibility associated with insanity, and that the majority of the insane should be held responsible for many of their misdeeds, and consequently incur some form of penalty or punishment. That this is the actual consensus of medical opinion by those most competent to judge, is clear, for the principle of petty punishment is practised in every hospital for the insane of my acquaintance. Every medical officer of our State and private insane hospitals realizes that many of the patients in his institution often commit misdemeanors deliberately, wilfully, and with malice aforethought, beside knowing right from wrong, and with full understanding of the nature, character, and even consequences of their misdeed. Hence, we find the insane subject to mild forms of punishment, according to the nature of their offence, such as not allowing them to attend the weekly dance, on account of fighting, or refusing the privilege of their parole, after an attempt to elope, or if caught pilfering, cutting off the weekly allowance of tobacco, or if abusive to the medical officer, removal from a convalescent to a more disturbed ward.

These and many other similar penalties are imposed upon the inmates in every well-managed

institution, not simply to maintain discipline, but also as a penalty for misconduct, and while the term "punishment" may be objected to, as having the sound of harshness, yet whether these inflictions be considered merely the withdrawal of certain privileges, or as precautionary measures, and not true punishments, in order that this ruling may be valid, the penalties imposed must be permanently enforced. As a matter of fact, however, the withdrawal of the privilege is not permanent, but only temporary, and subject to the same construction as that which applies to the sane man when he is sent to prison. There are, therefore, simply differences of degree and not of kind, and consequently equivalent to mild or severe forms of punishment.

In order to prove that the insane possess powerful control over their conduct, Dr. Mercier mentions the fact that in those patients whom he allowed "pocket money" the prospect of having this stopped restrained them from practises of mischievousness, destruction and other evil habits. Under no circumstances, however, we are informed, has the superintendent of a hospital the lawful right to punish in any way an insane person, because legally such persons are not responsible. It is surprising, however, in many criminal cases where insanity is used as a plea to exonerate crime, how the various members of the medical profession, as well as the public, insist upon punishment as being the only remedy for justice, even when the evidence favors the view of undoubted insanity of the accused. The same spirit incited the late Dr. Hammond, when placed on the witness stand in the celebrated trial of Guiteau, who assassinated President Garfield. When asked for his professional opinion, Dr. Hammond is said to have exclaimed, "He is insane, but hang him." According to law, we are told that under no circumstances have we the lawful right to punish an insane person, yet Guiteau was hung.

Not long since, in the city where I reside, there occurred two atrocious murders. In both, the plea of insanity was urged as a defence for the crime. In one it was proven that the prisoner, a young married man, was an epileptic, having had characteristic periodic attacks since childhood, up to the time of the murder. The crime was a most brutal one, and associated with all the damnable elements which are peculiar to epileptic homicidal mania. Upon being called to examine the prisoner by the defence, and having had him under observation during his confinement in the jail, I did not hesitate to pronounce him insane, the epilepsy being accompanied with pronounced religious delusions. The marked difference of opinion, however, that prevailed between the medical men, and the high state of public prejudice against the accused, as well as the result of the trial, which ended in the man paying the death penalty on the gallows, is the responsible cause of my appearing before you to-day, as it at once created a desire to be set right, if my views were not in keeping with modern medical thought and practical clinical psychiatry.

In order that you may further understand my purpose, the following brief editorial, taken from one of our daily papers, speaks for itself:

Taylor Case Verdict.—"The attorneys for Bud Taylor have the satisfaction of knowing that they did all they could to save their client from the consequences of his crime, and the public has the satisfaction of knowing that the deliberate ambushing and slaying of a young woman of the community without just cause or provocation, is to meet the punishment it deserves—if the verdict of the criminal court shall stand. The defense made out a strong case from its viewpoint. Epilepsy as an excuse for murder saved one man from the gallows a couple of years ago in this city, but it was unsuccessfully evoked in the present case. Only one man of the twelve voted for insanity, and his convictions were not very pronounced.

In some respects the trial was one of the most remarkable in the criminal history of Jackson County. Not the least interesting feature of the proceedings was the unusual array of medical experts put upon the stand on both sides, and the wide divergence of their opinions. At times this divergence bordered on the humorous, if the matter under consideration had not been of so serious a character. How eminent physicians, graduates of the same school of medicine, could arrive at two entirely opposite conclusions from the same given set of facts is one of those strange things with which this world abounds. If books and clinics and observation and experience, the sum total of knowledge used by the physician in practising his profession, teach anything, they should teach substantially the same thing all the time. Making due allowance for the difference in personality, temperament, physical condition and all that, the effect of the same cause must generally be of the same nature in all. Even expert testimony cannot overturn the law of induction. Between this bewildering conflict of evidence, the jury evidently took the only view which comports with common, every-day sense, and that was that a man who showed sufficient sanity to plan and carry out a murder with the intelligence and deliberation shown by Taylor in the killing of Ruth Nollard, was not suffering from a form of insanity which should give him immunity from punishment for his foul crime. The jury evidently thought that Taylor's fits didn't last three days, while he lay at his window with his rifle trained on the street, waiting for his victim, whose offense was that she had refused his unwelcome attentions."—*K. C. Journal.*

The second case was that of a young married woman who shot her husband, and as he fell to the ground mortally wounded, kicked him in the face and spat upon him, all because, as her relatives alleged, he had betrayed her as a lover and refused to support her as a husband, after

a forced marriage. The plea of insanity was used as a defence for the crime. Being called by the defense to examine the woman, and having visited her several times at the jail, it was my opinion that she was not insane, even at the time when she committed the deed, and so testified. The result of the trial ended in her being sentenced to ten years in the penitentiary.

Her lawyers, however, took an appeal, and a new trial was granted by the Supreme Court of Missouri. In the mean time she married again, while her father and brothers were arrested and charged as being accessories to the crime. One of the boys was found guilty and sentenced to serve two years in the penitentiary. In the second trial the woman was acquitted, but not before her brother had served his term of imprisonment. By her acquittal the jury practically said that a crime, taken in its legal acceptance, was never committed; hence her brother had actually served a term in the Missouri penitentiary for a crime that was never legally committed. Is he therefore to be considered a legal convict? And how was it possible for him to assist in the commission of a crime that never, in law, happened? This is a question that, so far, has not been answered.

In 1901 Dr. A. B. Richardson,[4] of the Government Hospital, Washington, delivered an address to this association on the subject of "Graduated Responsibility," in which he maintained that graduated responsibility before the law was not only advisable, but necessary, and that judges and jurors as well as legislators should strive to vary the penalties imposed not only to meet the degree of the criminal act, but also to fit the indidual himself.

That some of the insane are wholly irresponsible for their misdeeds, and justly demand complete immunity from all forms of punishment, all will agree. Moreover, it cannot successfully be denied that a very large number, perhaps the majority of the insane, are, to some extent at least, responsible for much of their misconduct. If, therefore, we can, as a profession, adopt the truth implied in these two propositions originally set forth by Dr. Mercier, viz.: (1) the total immunity of some insane offenders for some acts, and (2) the mitigation of punishment in more or less degree, for all crimes done by insane offenders, we shall not only have taken a great step in advance, but also formulated a more just and equable medicolegal standard for this class of miscreants. The practical importance of securing a consensus of medical opinion regarding these important questions, is therefore obvious, as at present we have no absolute guide or standard of authority to which we can refer.

If, as we are informed, our courts of law desire to know not so much individual as the consensus of medical opinion by those most competent to judge concerning medicolegal questions, who, I ask, has a better right to furnish the solution of these problems than this worthy organization? Unless we are agreed, how can we expect our courts to deal justly with such offenders? In an able article by Dr. C. W. Hitchcock,[5] of Detroit, Mich., on "Mental Responsibility," which he read at the annual meeting of this association in 1900, he states "That he ventures to hope that his desire for the establishment of some sort of standard to which such cases as he reported shall be made to conform, or by which they may be measured, or which at least may serve as a guide as well as for the purpose of comparison, is not entirely utopian or chimerical." Moreover, we should endeavor to set forth what mental conditions should exonerate the insane offender from all form of punishment.

Wherry, in his able article, claims that "the most reliable and efficient test for responsibility when insanity is pleaded as a defense to crime is this: 'Is the crime charged the product and direct result of the insanity alleged?'" "This," he states, "requires that the insanity shall first be proven, but does not indicate that the establishment of insanity necessarily carries with it a condition of irresponsibility." "If the alleged insanity is proven to be associated with a vicious nature, if the crime charged is the product and direct result of hatred or malevolence or evil passions or wicked desires, then the act is vicious in its nature, and vice should never be vindicated simply because disease has given it undue prominence." A man is not responsible for his insanity, but is responsible for his vice. If, on the other hand, conscientious insanity be established, *i.e.*, if the prisoner be the victim of delusions or hallucinations, if his processes of reasoning be imperfect and misleading, though starting from correct premises, or perfect and logical, but based on premises which are untrue, if while drawing conclusions as best he can according to his light, the light becomes a flickering, wavering will-o'-the-wisp that leads him into devious ways where saner men would never go; if he uses the judgment disease has spared in an effort to do what to him seems right, even though it leads to a bottomless pit, then is he not only insane, but honestly and conscientiously so. A man who yields to the dictates of desire is vicious, whether he be insane or not; but a man who acts in response to the dictates of a diseased judgment is conscientious whether he be insane or not. The insane may therefore be divided into two classes—those dominated by desire and those dominated by diseased judgment. The former constitute the vicious insane, the latter conscientious. The one is responsible, the other irresponsible.

According to Dr. F. McDonald,[6] of New York, the real test of responsibility is not a knowledge of right or wrong with reference to the particular act; but, knowing the right and knowing the wrong, has the man the power to choose the right and avoid the wrong? It is therefore not a question of knowledge, but the power to choose between two courses of action.

If he has not such power, then his act is the product of his disease, and he is not responsible. There is, therefore, no legal test of insanity. Every case must be decided on its own merits, but the basic facts are that insanity is a mental disease, and the product of mental disease cannot be a crime.

In conclusion, it would seem highly desirable that this association take some definite action in formulating certain deductions to which we can all agree relative to the mental responsibility of the insane, and thus tend to overcome the prevailing misconception concerning insanity. Such a course would also furnish a reliable guide by which the interests of both law and medicine could justly be subserved, when insanity becomes associated with crime. If these imperfect remarks could serve the means of such a happy consummation, their purpose will have fulfilled their highest mission.

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ON THE MECHANISM OF EXOPHTHALMOS.

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We are still so far from comprehending the nature of exophthalmic goiter that light upon it from any side may be welcome. It has seemed probable that the study of the individual symptoms might be of value in this respect, and we have attempted to determine experimentally the mechanism of the exophthalmos. Since, however, it is after all impossible to be sure that the exophthalmos which one may produce experimentally is the same as that seen in this enigmatical disease, we have contented ourselves, for the time being, with the study of the phenomenon produced in animals by disturbance of the circulation or by the stimulation of the cervical sympathetic, being well aware that although many surgeons hold that exophthalmic goiter is the expression of the continual stimulation of the cervical sympathetic, we are by no means possessed of conclusive proof that this is so.

It is hardly expedient to enter here into a discussion of the nature of all the variety of exophthalmos. Those forms which result from hemorrhage into the orbit, from emphysema of the orbital tissues, from exostoses, tumors or cysts either in the orbit or in adjacent parts of the cranial cavity, from inflammation of the orbital tissues or neighboring tissues, etc., require no special explanation. Nor are we directly concerned with the various forms of pulsating exophthalmos due to arteriovenous communications, aneurisms, etc. In the absence of such definite and obvious causes there still remain to be explained a great many cases among which those associated with exophthalmic goiter are prominent. The greatest variety of explanations, sometimes resting upon experimental work, has been proposed, and these may perhaps be reviewed briefly. These explanations rest either upon vascular alterations or muscular changes.

In especial favor is the idea that if from any cause the venous channels in the retrobulbar spaces become overfilled and dilated an adequate cause of exophthalmos is at hand. This is the basis of the explanation of those cases of pulsating exophthalmos in which arteriovenous communications exists, as may be shown by anatomical investigation (Eales, Schlaefke). Similarly in those cases in which there is thrombosis of the cavernous sinus, there may be an extraordinary protrusion of the eyeball, and this is explained by Eales as due to pressure paralysis of the third, fourth, fifth, and sixth cranial nerves. In those cases, however, as was exemplified recently in the Johns Hopkins Hospital, the protrusion of the eye is associated with the most extreme edema of all the tissues drained by the ophthalmic vein, so that it seems more probable that the exophthalmos is largely due to the edematous swelling of the retrobulbar tissues, although in part directly to the enlargement of the veins.

It has been held by some authors that the widening of the retrobulbar veins, and hence the exophthalmos, is due to vasomotor paralysis (Sattler, Buschan, Matthiesen, Ferri), by others that it is due to active vasodilatation (Schmidt, Rimpler, Ehrich, Rieger and von Forster). Still others ascribe it to the chronic passive congestion resulting from any compression of the veins or obstruction to the return of the blood to the heart. Diseases of the lungs, cervical tumors, bronchocele and the like (Nunneley, Taylor), intrabulbar hyperemia (Eulenberg and Guttmann) and even edema of the membrane of Descemet (Pauli) have been adduced as causes of the protrusion.

Most of these opinions are merely *opinions* and not based on any definite anatomical or physiological observations, but there has also been some experimental work along the same line.

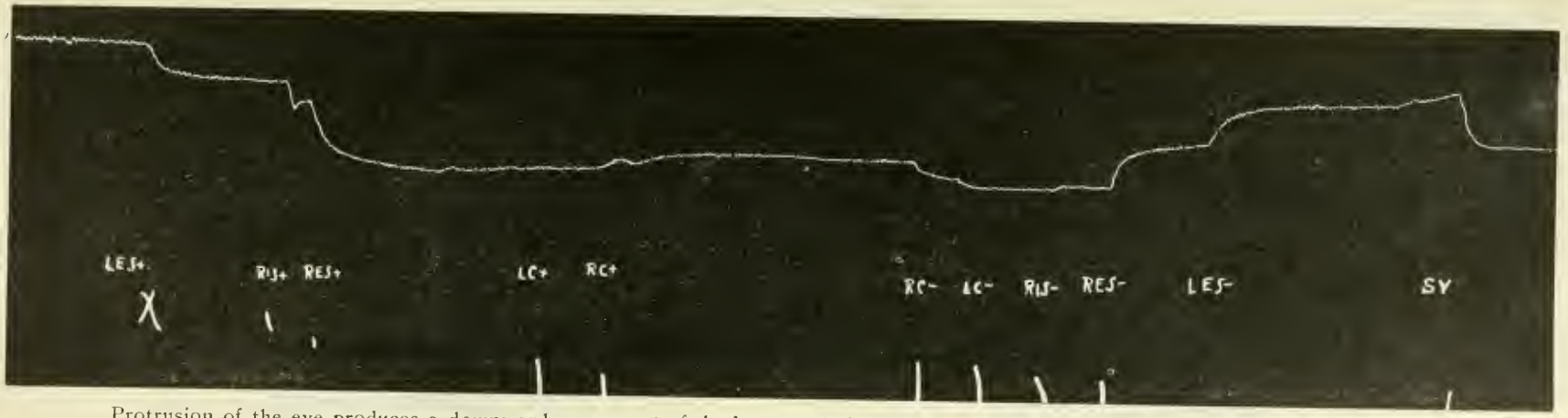
Boddaert, for example, experimented with rabbits with the following results:

1. Section of the cervical sympathetic with ligature of the external jugular on the same side gave exophthalmos on that side lasting a few days.

2. Simple ligation of the external jugular gave only transitory results.

3. The first procedure plus section of the cer-

Chart 1.



Protrusion of the eye produces a downward movement of the lever, and vice versa. + indicates ligation or clamping of the vessel. — indicates the release of the clamp or ligature. R I J, R E J, L E J. Right internal, right external and left external jugular. L C and R C. Left and right carotid. S V. Stimulation of cervical sympathetic, which in the dog is united with the vagus. The sympathetic stimulation was carried out after the eye had returned nearly to its normal position.

Chart 2.

Same lettering as in Curve 1. Sympathetic or vagus stimulation first produced. To the exophthalmos resulting from this there are later added the effects of ligation of the veins.

vical sympathetic on the other side gave double exophthalmos, but more marked on the side on which the vein was ligated, lasting three to four days.

4. Tying both external jugulars gave exophthalmos lasting a few days.

5. In such animal compression of the common carotids caused a recession of the eye, but when the cervical sympathetics were cut this was very slight.

6. Double ligation of the jugulars with double sympathetic section gave exophthalmos lasting ten to fifteeen days and even in traces for two months.

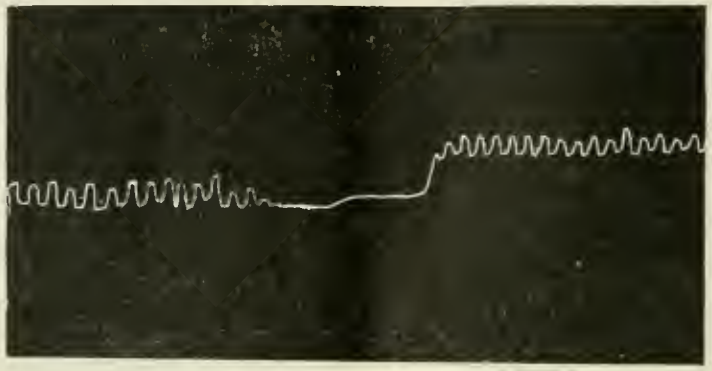
He thought that the orbital muscle is paralyzed by section of the sympathetic, and a retraction of the bulb follows. Probably edema of the retrobulbar tissue causes protrusion secondary to the hypervascularization.

Stilling and Vulpian were able to produce the same changes, but thought that such an experiment could throw but little light upon the exophthalmos of Basedow's disease.

We have repeated some of these experiments with certain variations, and have endeavored to control the results accurately by the use of an apparatus consisting of a lever working about a pivot and recording the movements of the eye on a revolving drum. Such an apparatus was easily constructed of two straws attached at right angles by means of a metal part about which the whole swung on a pivot, the head of the animal being fixed in such a position that the axis of the orbit was vertical. One end of this lever rested vertically upon the cornea, being held in place by a hollow foot of wax, while the end of the other branch, armed with a paper point, traced the curve upon a vertical revolving drum.

Curves drawn with this instrument show respiratory waves, as well as waves which correspond with the pulsation of the heart. It is therefore seen that the position of the eye is slightly modified by both these factors. If now the jugular veins and carotid arteries be separately clamped, very definite changes in the position of the eye occur as are well shown in the curve. Briefly the results may be stated as follows: Ligation or closure of the internal jugular vein on either or both sides produces little or no effect. Closure of the external jugular on the side upon which the eye is being observed produces a marked exophthalmos, which is greatly increased

Chart 3.



Shows marked respiratory and pulse waves. During the application of the stimulus to the sympathetic, which produces the protrusion here marked by a rise in the curve, the respiration is suspended.

Chart 4.

All cervical arteries and veins ligated. Simulation of the sympathetic still produces exophthalmos.

by the subsequent clamping of the external jugular on the opposite side. Closure of the carotid arteries now produces a diminution of the protrusion, which returns, however, to its maximum when they are again released. Finally the release of the external jugular veins allows the eye to sink back to its normal position. All of these phenomena occur, as may be seen in the curve, practically instantaneously. The absolute protrusion in one dog from which we obtained the curves which we reproduce here, when calculated in millimeters, was 3.2 mm. (Charts I and II.)

From this experiment it will be seen that the degree of protrusion produced thus by suddenly clamping the jugular veins is considerable, but would doubtlessly yield after a time to the establishment of a collateral channel of outflow for the blood. If the jugular be left ligated, however, a great edema of the face and eyelids associates itself with the distention of the veins and only gradually disappears. This edema, which apparently involves also the retrobulbar tissue, seems to aid greatly in the protrusion of the eye, and we have thought it an important factor in those cases in which the cavernous sinuses are thrombosed. (Chart III.)

Now it is well known that without any mechanical interference with the circulation of the neck and head one may, by stimulating the cervical sympathetic nerves by means of a current from an induction coil, produce a great exophthalmos (Chart III). Associated with this protrusion there is a retraction of the eyelids and a maximal dilatation of the pupils. Whether there is any alteration in the size of the vessels about the eye and in the retrobulbar space, we could not determine by inspection, but our impression was that there was no definite change. Dr. Randolph was kind enough to observe the retinæ of these dogs with the ophthalmoscope while the sympathetic trunk was being stimulated, but could not make out any alteration in the size of the retinal vessels.

Neverthless the idea that this exophthalmos is due to the distention of the retrobulbar vessels is so deeply rooted that other experiments were made to control these results. (Chart IV.)

In one dog both carotids were tied and the cervical sympathetic stimulated. Quite the same curve was produced as in the dog with the intact vessels. In another dog both common carotids, both vertebral arteries, and the jugular veins were tied (Chart IV). A slight protrusion resulted from the ligation of the veins, which was first performed, but after that the stimulation of the cervical sympathetic trunk produced such a great additional protrusion that there seemed no doubt that its action was independent of the circulation. Finally a dog's head was completely severed from the body and allowed to drain of its blood. Stimulation of the sympathetic now produced exophthalmos quite as marked as in any of the other dogs.

We conclude, therefore, that that form of protrusion of the eyeball which results from stimulation of the cervical sympathetic is entirely independent of the changes in the blood supply. What, then, we may ask, is the mechanism of the process?

Numerous theories as to the action of the muscles have been put forward to explain the protrusion. On the one hand relaxation of the eye muscles and other supports of the eye (Cooper), fatty degeneration and atony of the eye muscles (Traube, Recklinghausen, Bristowe), toxic atony of eye muscles (Lemke), have been held accountable. Fürst, however, quotes a case of ophthalmoplegia to prove that, contrary to Lemke's statement, weakening of the eye muscles produces, if anything, enophthalmos. On the other hand, spastic conditions of the eye muscles (Brüke), overaction of the oblique muscles where the recti are paralyzed (Salomonsohn), have been thought to produce the same effect.

Finally, Sappey, Wagner, and others have thought the protrusion due to the contraction of the so-called musculus orbitalis of Müller. Müller in 1859 described the smooth muscle of the eyelids and also this cone of smooth muscle and elastic fibrous tissue which surounds the eye and by its contraction keeps it forward. Wagner, who attempted in vain to produce exophthalmos in the head of a decapitated woman by stimulating the sympathetic, does not think that the muscle is sufficiently developed in man to have such an action. Th. Harling described in detail the antagonistic action of the muscle to that of the voluntary muscle of the eye; from its funnel shape and its anterior attachments it keeps the eyeball pressed forward. Since, as Müller stated, it is innervated by the cervical sympathetic, the explanation of the exophthalmos may be reached in a simple way. In man, however, he thinks its function chiefly protective. Sappey in 1868 reported a dissection showing that in man the protrusion of the eyeball after stimulation of the cervical sympathetic is due to the existence of smooth muscle fibers which form part of the orbital aponeurosis which constitutes a true fibromuscular sheath. The muscle forms a contractile cuff of conical form, the apex being posterior, so that by its contraction the eye is pressed forward.

We have studied this structure in man and in the dog, and find that, as these authors state, it is far better developed in the dog, where it forms a smooth conical mantle about the eye, continuous anteriorly with the musculature of the lids and forming abundant attachments about the margin of the orbit, passing backward thence, to end about the foramen through which the optic nerve enters the orbit. Nevertheless, this muscular tissue is by no means wanting in man. Here, too, it is continuous with the smooth muscle of the eyelids, and is continued backward in the membrane which lies immediately outside of the bulb (capsule of Tenon).

Anatomically everything seems, therefore, to

point to the possibility that protrusion of the eye might be produced by the contraction of such a muscle.

We have also endeavored to ascertain the extent of the participation of this smooth muscle cone in the production of exophthalmos by direct observation. The top and side of the orbit were removed in a dog and the bulb thus laid bare and freed from surrounding fat. The cervical sympathetic was then stimulated, and we could see a distinct peristaltic wave pass backward throughout the length of this cone, pressing the eyeball forward into the position seen in exophthalmos. Allowing the muscle a few miutes for rest, this could be repeated several times. We then cut with scissors around the middle of this membrane-like cone so as to completely sever the anterior from the posterior half. Stimulation now produced a contraction of the posterior or small end of the cone, which retracted out of sight into the optic foramen, while the eyeball remained stationary.

The simple conclusion for these experiments seems to be that on stimulating the cervical sympathetic nerve the ocular protrusion which results is not due to vascular changes, but to the peristaltic contraction of the cone of the musculus orbitalis which presses the eye forward.

We have, through the courtesy of the surgical staff of the Johns Hopkins Hospital, been able to observe two cases in which, in human beings, stimulation of the cervical sympathetic trunk just below the superior cervical ganglion was carried out. In neither was there any visible exophthalmos, although in both the pupils became greatly dilated on that side. Jonnesco reports, however, the production of exophthalmos in human beings by the use of a strong current in stimulating the sympathetic. (XIII. Cong. Internat. de Méd., Paris, 1900.)

We were further interested to determine whether or not we might produce exophthalmos without pupillary dilatation by stimulating some other part of the sympathtic system. In other words, whether we might find some point at which stimulation would not produce both these phenomena. We therefore traced the sympathetic cord back into the thorax in a cat under artificial respiration, and found that the requisite impulses were produced along a path which could be traced into the second ramus communicans, *i.e.*, into the second ventral root in the dorsal region, but here stimulation produced both exophthalmos and pupillary dilatation, and in spite of the most painstaking exploration of the dorsal and cervical cord, the floor of the fourth ventricle, and the aqueduct, we were unable to find the point we searched for, nor even to produce either of these phenomena from these higher centers. Further search, however, may reveal such a point. Similarly our efforts to produce exophthalmos by stimulating nerves going to or from the thyroid were futile.

In view of the objection which has been raised to the idea that continual stimulation of the sympathetic might form the basis of the exophthalmos in Basedow's disease, we kept up a mild stimulation of the sympathetic in dogs for periods of eight and ten hours, and found that the exophthalmos persisted fairly well all day. A gradually if slightly increasing stimulus seemed, however, to be necessary to maintain the degree of protrusion obtained at first.

We may conclude then that

1. Obstruction to the outflow of blood from the veins of the orbit produces at once exophthalmos, which is relieved by the establishment of a collateral circulation. This process, however, is completed so slowly that in the meantime the orbital tissues as well as the tisue of the face become very edematous, thus adding to the exophthalmos.

2. Entirely independent of any circulatory changes is the exophthalmos produced directly by the stimulation of the cervical sympathetic nerve. This protrusion is due to the peristaltic contraction of the orbital muscle.

From these experiments we can draw no certain conclusions as to the mechanism of the exophthalmos in Graves' disease, but the possibilities are perhaps more closely defined.

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Hartford Hospital Gets $500,000.—It was learned on October 3, that by the will of Miss Maria Terry, who died at Venice a month ago, the Hartford Hospital will receive approximately $500,000. A director of the hospital, when asked to confirm the report, said that the institution had been remembered by Miss Terry, and he thought the bequest would amount to about half a million dollars.

SOME NOTES ON A CASE OF ERYTHROMELALGIA; WITH TREATMENT.

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The points in the case about to be described, while not in themselves especially remarkable, may nevertheless prove of some interest as illustrating the peculiar conditions met with in this distressing disease.

At the time of onset the patient was a woman of fifty-seven years, and the mother of three children who are still alive and well. She came of a family in which alcoholic or other indulgence was practically unknown. Her father died of apoplexy, and for many years her mother suffered with nephritis, which terminated fatally when she was in her fiftieth year. A brother died of carcinoma of the inferior maxillary, and a sister of a complication of diseases. It is interesting to note that no history of mental or nervous trouble was obtainable on the side of either father or mother. The patient had the common diseases of childhood, save diphtheria and scarlet fever. At twelve years she had a severe attack of acute articular rheumatism, with an associated pericarditis, but recovered completely and never had a recurrence.

Her first child was born when she was twenty-three years old; it was a forceps delivery and she is said to have had a very "hard time." Then neuralgia of the trigeminus set in and continued for twelve years, being of so severe a type that she was confined to bed for three days in every week. The second child was born four years after the first; the labor was fairly easy and recovery uneventful. The third child was born ten years after the second, when the patient was thirty-seven years old, previous to which all neuralgia had ceased spontaneously. There was never any further pain in the head. Menstruation began at fourteen; it was difficult at first and compelled the patient to leave boarding school; after it became established it was always regular in appearance, duration and quality until her forty-seventh year, when the menopause took place.

The onset of the disease in question took place in 1899. At that time the patient experienced sharp and severe pain in the great digit of the right foot, which, in her own language, resembled very closely the sting of a bee. There was, from the first, extreme sensitiveness to touch, and it was at times impossible to keep a stocking on the foot. The pain was worse at midday, and usually reached its height when the patient came to the dinner table, gradually lessening during the afternoon, and allowing her to sleep fairly well at night. Inspection showed some swelling of the entire toe; the skin on the dorsum was pale and had a varnished look, while on the plantar aspect there was a mottled appearance not unlike that of frost bite. The toe was exquisitely sensitive, and so hot that an ice-cloth, when it was possible to apply it, would dry so perfectly within ten minutes that it gave the appearance of being starched. The patient was obliged to walk on the heel. These observations were made during the first month.

It should be emphasized at this point that throughout the most distressing and uncontrollable condition was the pain. By September, 1899, this symptom had greatly increased, both in frequency and severity, but was not worse at any particular part of the day. It began to interfere with sleep, and was less easily governed by cold; occasionally, hot cloths seemed to give greater relief. The symptoms from this time on were somewhat masked by the use of morphine, which had to be resorted to in the absence of relief from any other drug.

On November 1 the patient went to the Presbyterian Hospital in New York, where she was seen by Dr. M. Allen Starr, who made the diagnosis. She was put on potassium iodide, 20 grains, three times a day; the leg was slightly elevated in a comfortable position, and a bed-rest made to keep the covering free from contact with the feet. In two weeks she became dissatisfied and went to her home in the country, where the same treatment was continued.

Local examination revealed the same condition as was described above, with extension to the ball of the foot. Upon being questioned she admitted the presence of some slight pain in the great toe of the left foot, but regarded it as unimportant. Electricity proved that degeneration was rather advanced in both feet, but in the right more than in the left. At this time the patient walked about the room on her right heel, or traveled about with the right knee on a small chair which she pushed along. She soon took to bed, however, and remained there several months.

The heart was moderately hypertrophied, but about in its normal position; occasionally it skipped a beat, or perhaps two or three beats, and then would become irregular, beating faster and faster till it finally slowed down to normal. No organic murmurs were discoverable. The pulse was strong, fairly regular, slow, full and of increased tension. The radial artery was thickened, but compressible; lungs, normal. Loss of memory was becoming noticeable to the patient, and was marked even to the casual observer. She had always possessed a very good memory. Sight and hearing were good. Reflexes were slightly diminished. There were no twitchings, and no peripheral disturbances, save in the diseased region. Symptoms in the alimentary tract were probably due to morphinism; the mouth was dry; tongue, furred; appetite, lost; digestion, imperfect, with formation of a great deal of gas which was pased *per orem*.

The desire for morphine now became irresistible at exactly the same hour each day, and was evidenced by a very abundant watery secretion from the nose, by the belchings of large quanti-

ties of gas, a "gone" feeling in the stomach, and heart weakness. If unrelieved, collapse symptoms became imminent; but an eighth of morphine caused immediate disappearance of all these effects in from twenty to thirty minutes. It is necessary to state, however, that at no time did the amount of morphine administered exceed five-eighths of a grain in twenty-four hours, and the average was about three-eighths. The bowels moved daily, resort to cathartics or enemata being necessary only a half dozen times during the entire illness of four years and nine months.

In the winter of 1900 the symptoms were most marked, and the severity of the disease process may be said to have reached the high-water mark. Examination showed that all the toes of the right foot were involved, and had a peculiar purplish tinge on the plantar aspect, while the dorsal aspect looked pale and shiny. The nails also had a purplish appearance with a dull waxy luster. The ball of the foot had a mottled purplish color, which was most prominent over the first metatarsophalangeal articulation. In the hollow of the foot there were several reddish patches, irregular in shape, reminding one of a spatter of red ink, and varying in size from a ten-cent piece to a quarter. The sides of the dorsum of the foot also had three or four patches, but as remarked before, they were not present on the dorsa of the toes. There were four or five spots on the posterior aspect of the leg, and one or two on the thigh, but none were situated on the anterior aspect. These spots were darker in color than those on the foot, and had the appearance of an old contusion of the skin, being partly yellowish or bluish.

Very soon the pain left the right foot, and the symptoms it had presented began to disappear. The swelling of the toes subsided, the spots disappeared, desquamation took place, and there was the look of new nails growing out from the old matrices. The same improvement took place in the left; all acute symptoms subsided, and the patient passed into a condition of comparative comfort. Numbness and "queer" feelings continued for about a year, during which the patient enjoyed good health and regained complete use of her limbs which had atrophied from disuse. There was never the slightest evidence of bony deformity.

In February, 1903, she experienced unpleasant sensations in her back and legs. There were chilly feelings which soon developed into actual chills, coming on every morning on getting out of bed, and lasting for an hour or more. Stiffness and soreness in the joints soon followed, and one month later severe pain began in the hallux of the left foot. The left knee became stiff and sore, but there was no limitation of either active or passive motion, save the discomfort of the operation. There was also considerable pain in the left hip which lasted for one month and then subsided. The fear of gangrene, which was at one time entertained proved to be a groundless one, for this condition never developed. In June the patient began to be confined to bed, and suffered for four months all the tortures that accompanied the progress of the disease through her right side; the sequence of involvement, appearance on examination, and subsidence, being precisely the same.

The symptomatic treatment of this condition may be said to have been a total failure, since nothing stopped the progress of the disease, and even morphine finally failed to control the pain. Such local applications as the much-vaunted antiphlogistine were intolerable, and had to be washed off immediately after application, giving the patient much additional pain in the process. The iodide of potassium alleviated the condition for a time, but had to be stopped because of its severe action on the stomach. Nitro-glycerin was tried, but was soon abandoned. In securing relief, two conditions were to be met: First, to control the pain; second, to control the craving for morphine. The patient was really starving because she could neither take nor digest food suitable for the maintenance of life, even broths, peptonized milk, and light custard being rejected. As an experiment we began to use fluid extract of ergot in 30 minim doses, three times a day, gradually increasing to a dram dose. Within ten days the pain began to lessen, and the dosage was reduced until the drug was no longer necessary.

At the same time it was deemed advisable to give some preparation of strychnine, since this drug is a synergist of ergot, tones up the nervous system, acts directly on the digestive apparatus, and is somewhat antagonistic to morphine. Accordingly, one-thirtieth grain of the sulphate of strychnine was given three times a day, as this seemed the most convenient form of administration. The morphinism was treated by gradually cutting down the dosage and administering an equivalent amount of dionin and peronin, using each a week at a time, entirely without the patient's knowledge, of course. At the end of three weeks the appetite had returned completely, the morphine habit was broken, and the drug discontinued. No other treatment was henceforth employed, save good substantial food and the continuation of the strychnine for two weeks longer.

For three months the patient gained in strength. She got out of bed, and recovered complete use of her limbs without the interposition of any symptom previously manifest. During this time there was thickness and indistinctness of speech, with amnesic aphasia and agraphia. At times the patient seemed dazed and unable to answer simple questions directly; she was perfectly conscious of her surroundings, however, and called each member of the family by name. There was apparently complete loss of memory for persons and objects which she had not seen for an interval of ten years. Within this limit the memory was fairly good. The

mouth was somewhat drawn down toward the right side, but there was no motor paralysis elsewhere; she had perfect control of the arms and hands. Occasionally, the fingers felt numb, and the nose would itch and become quite red, but no pain could be elicited. The patient's disposition became entirely changed, she was mild, gentle, never lost her temper, and was inclined to be optimistic. These points were especially noticeable to members of her family. On December 27 she was seized with violent coughing and choking at the dinner table, and upon examination was found to have had a typical apoplectic seizure, from which she died within twenty-two hours. It is greatly to be regretted that no autopsy was obtainable.

The points to be emphasized in this case are: (1) The acute onset; (2) the severe pain; (3) the gradual progress; (4) the long periods of intermission. Looked at in perspective it is doubtful if the treatment finally employed had as much influence on the disease as was at first thought from the rapid subsidence of the symptoms, as she had had two previous intervals of freedom from pain. Since other cases reported in the literature differ in so many respects from this, there is certainly no specific remedy available.

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A FACTOR IN THE CAUSATION OF EMACIATION IN TUBERCULOSIS OF THE LUNGS.[1]

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It is a well known truth that emaciation is more characteristic of tuberculosis than of any other disease. In fact the words phthisis and consumption derive their origin from this one symptom.

But very little investigation has been undertaken to explain this emaciation. Some authors ascribe it to an increased metabolism "inseparable from the febrile process." Others claim that it is due to a specific toxin which increases the catabolic activities of the cells.

To investigate the relation of digestive activity to emaciation in tuberculosis, the experiments about to be enumerated were made.

An attempt was made to ascertain the activities of the digestive glands of patients suffering from tuberculosis of the lungs by comparing them with the activity of the digestive glands of normal persons and the glands of patients suffering with malignant disease.

As it was almost impossible to obtain the gastric juice from a sufficient number of patients, it was necessary to take a secretion which could easily be obtained. So the saliva was determined upon as the medium for investigation.

1 The writer is indebted to a number of gentlemen for their encouragement and assistance. He is under especial obligations to Dr. Wm. J. Gies, Dr. Ira S. Wile, the Resident Physician at Seton Hospital, and Dr. G. Alfred Lawrence, of the Skin and Cancer Hospital.

The saliva is an excellent secretion for experiments of this kind. In impaired digestion, it shows less change than the gastric or pancreatic secretions. Therefore, there is all the more reason for believing that a pathological state of this fluid is of the utmost importance as an indication of a change in the system. Those pathological changes which have been found to exist in the saliva have usually been specific changes due to some extraneous substance and not to an altered state of the secretion, *per se*. Among the extraneous substances might be mentioned potassium iodide, urea, bile salts, etc. On the other hand Fenwick claims "that the sulphocyanide of the saliva is a measure of the functional activity of the nutritive organs, and that it is increased in general whenever an unusual demand is made on them by the necessities of the system, provided these organs are capable of responding to the call, as in the early stages of acute inflammation, of cancer, phthisis, etc. The quantity is diminished in all conditions where the nutritive organs are unable to supply the requirements of the system, as in the later stages of phthisis and malignant disease."—(Von Jaksch, Clinical Diagnosis).

One may ask what defense may be sought in using the saliva as an indication of the activity of the other secretions of the alimentary canal. In the first place, the general tendency is for the whole gastro-intestinal canal to be more or less affected when one individual portion suffers. For example, there is an excessive secretion of saliva in pyrosis and a diminution in the amount of secretion in fevers. The fact is well established that in any pathological condition of the stomach or intestines, the rest of the alimentary canal is likewise in an altered condition, either organically or functionally. This may be explained in one or two ways. Either the specific function of the *whole* canal is for digestion and assimilation of food or else the various nervous centers of digestion in the central nervous system and in the sympathetic ganglia are so associated and correlated, that one centre exercises an influence over the others.

The saliva may be taken as an indication of the secretory activity of the whole gastro-intestinal canal for the following reasons:

1. The saliva shows less change in impaired digestion than the other secretory fluids of the gastro-intestinal canal.

2. In some diseases of the gastro-intestinal canal, the saliva undergoes a pathological change.

3. The centers for the secretory apparatus are so intimately connected in the nervous system, that one set of organs is governed reflexively by the condition of the others.

Accepting the saliva as an indicator of the glandular activity of the gastro-intestinal canal, the following experiments can then bear considerable weight on partially determining the cause of emaciation in tuberculosis of the lungs.

One objection may be raised. In the experi-

ments, the tubercle bacillus would invariably be found in the saliva. Now is it not possible that the presence of the bacillus in the secretion may be of some import? This point may be dealt with summarily. The saliva as found in the mouth, is so full of bacteria, yeasts, fungi, etc., often the tubercle bacillus itself being present, that it can hardly be asserted that this one species of bacteria can have any influence on the starch digesting power of the saliva.

The writer's technic carried out in the experiments was as follows:

Method of Collecting the Saliva.—The saliva from the tuberculous patients and the healthy individuals was collected in the forenoon; the saliva from patients with malignant disease was obtained in the afternoon. Each patient was supplied with an ordinary elastic band which was sterilized by boiling. This was chewed upon for ten minutes or until 10 c.c. of saliva was secured. The saliva was expectorated into a clean cup and from this was poured into a two ounce bottle containing a little thymol. The specimen thus collected could be kept indefinitely. The bottle was tightly corked and stowed away for a few days for subsequent examination.

At the time of the experiment, the saliva was filtered. Six c.c. of the filtrate was poured into a two ounce bottle. This was diluted up to 60 c.c. with distilled water, thus making a 10 per cent. salivary solution. The specimen was then ready for use.

Method of Procedure for Determination of Amylolytic Power.—It was found that the best method was that of titrating the digested fluid into a known strength of Fehling solution, used according to the method of Pavy.

Solution 1. 79.28 grams of crystals of copper sulphate are thoroughly triturated and added to 800 c.c. of distilled water. After the salt is dissolved, the solution is brought up to 1,000 c.c. with distilled water.

Solution 2. 346 grams of sodium potassium tartrate are dissolved in 400 c.c. of distilled water and 250 grams of potassium hydroxide in 400 c.c. of distilled water. The two are combined and distilled water is added up to one liter. In the experiments equal parts of 1 and 2 were used.

Test of the Reducible Power of the Fehling Solution.—Ten cubic centimeters of the mixed solution here used was titrated against 2.5622 grams of thoroughly dried glucose, dissolved in 100 c.c. of distilled water. It was found that .0538062 grams of sugar reduced 10 c.c. of the solution.

Pavy Modification of Fehling's Test.—Pavy's modification throughout the experiments, consisted in making an ammoniacal copper sulphate solution as follows:

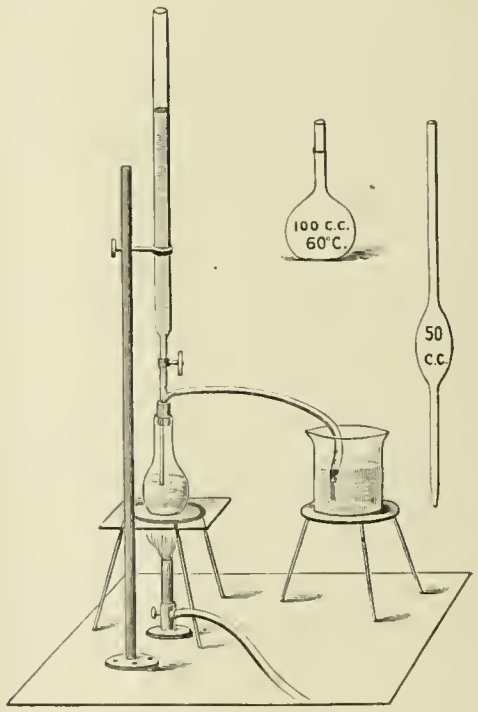
30 c.c. of Fehling No. 1.
30 c.c. of Fehling No. 2.
150 c.c. of 10 per cent. ammonium hydroxide.
290 c.c. of distilled water.
500 c.c. of the Pavy solution.

The solution was made up fresh every day, 50 c.c. of Pavy solution being used for each titration. It will thus be seen that 6 c.c. of Fehling solution was used each time.

The Pavy modification has many advantages in accuracy over the ordinary Fehling test. In the first place, the copper sulphate is in a more dilute solution. Secondly, the color change is in the solution and no precipitate is formed. Thirdly, the blue changes to a colorless solution. And fourthly, no oxidation from the air can possibly take place as the ammonia vapor occupies the space above the fluid when used in the apparatus about to be described.

Description of Apparatus.—A flask of 300 c.c. capacity is placed upon a tripod over a Bunsen burner, wire gauze serving as a protection from the flame. A 50 c.c. burette, graduated in tenths,

Fig. 1.



Apparatus used for titrating according to the Pavy method.

is connected with this flask by means of rubber and glass tubing, passing through a closely fitting two-holed stopper. Upon another tripod is a beaker containing distilled water. A short piece of glass tubing passes through the second hole of the stopper and is connected with a piece of rubber tubing whose free end is closed by a short glass rod and which is put into the beaker. Just above the closed portion of the tube, a small linear opening is made to allow the ammonia to run through the water. Fig. 1 represents in a crude way the apparatus used.

Preparation of the Digested Fluid.—Powdered arrowroot starch was taken as the material for digestion. This was finely powdered and exactly

one gram was weighed out and then poured into a graduate 100 c.c. flask in which 90 c.c. of distilled water had been measured as follows: 100 c.c. of distilled water was poured in up to the mark on the neck of the flask and then 10 c.c. withdrawn by means of a pipette. When the starch had been added, the solution was thoroughly shaken and heated to boiling, being constantly stirred so as to make a starch paste. The paste was then poured back into the flask and allowed to cool at room temperature.

As was noted before, the saliva had been made up in a 10 per cent. solution. To the starch paste was now added enough saliva solution to fill the graduated flask, thus one per cent. of saliva being used. This new solution was then thoroughly shaken and immediately transferred to an incubator at 100.4 to 104° F. and allowed to digest for exactly one-half hour. At the expiration of this period, the solution was quickly transferred to a beaker and boiled thoroughly so as to inhibit the action of the enzyme. One can now wait a few days before titrating for the amount of sugar.

Estimation of the Amylolytic Power of the Saliva.—The burette is thoroughly rinsed with a little of the digested solution. 50 c.c. of the Pavy solution is placed in the flask. The burette is filled with the digested mixture, which must not be used in a warm condition. The rubber and glass tubings, having been connected to the burette, the digested fluid is permitted to flow from the burette until a few drops escape from the lower end of the glass tubing. The stopper with its two glass tubes is now firmly inserted into the flask. The fluid in the flask is heated to boiling and the digested mixture is allowed to flow in to the Pavy solution, drop by drop until the blue color has entirely disappeared. The reading from the bottom of the meniscus having been previously ascertained, a second reading is taken in the same way and the result calculated by finding the difference between the two.

Five titrations of the same solution were made in each case and an average of the closely agreeing readings taken as approximately accurate.

Calculation of the Amount of Sugar.—The calculation of the amount of sugar was reckoned by the number of cubic centimeters of the digested fluid used. For example, 21.3 c.c. of solution being used, the amount of glucose equals 152 mmg. reckoned as follows:

10 c.c. Fehling reduces .0538062 grams of sugar.
6 c.c. Fehling (the amount used) reduces .0323 grams of sugar.
21.3 c.c. equals .0323 grams sugar.
1 c.c. equals .0015217 grams sugar.
100 c.c. of solution (1 gram starch) equals 152 mmg. glucose.

The amount of maltose is easily reckoned from this. Ordinarily 10 c.c. of Fehling reduces .0778 grams of maltose when 10 c.c. of the same Fehling will reduce .05 c.c. of glucose. So .0778:.05::x:.0538062 or 10 c.c. of the Fehling used reduces .083722447 grams of maltose.

Then glucose:maltose::1:1.556. Therefore, multiplying the milligrams of glucose by the factor 1.556 will give the milligrams of maltose.

Method of Testing the Alkalinity.—Ten c.c. of the 10 per cent. filtered saliva was used. Congo red and lachmoid were the indicators. There was practically no difference in results when an average of five titrations was made. The ordinary titration apparatus (burette, etc.), was used, the titration being made with hydrochloric acid of a known strength. The results were read in tenths of a gram and then transposed into milligrams. Each cubic centimeter of acid neutralized .0025 grams of NH_3, whence each c.c. of hydrochloric acid equalled .00502 grams of sodium carbonate, which was taken as the constant alkaline medium in saliva. The results were ascertained as follows:

1 c.c. HCl = .0028 grams N.
N = 14 H = 3
Therefore .0034 NH_3 = 1 c.c. HCl.
$NH_3 + HCl = NH_4Cl$
17 36.5
Therefore 17:36.5:: .0034:x
X = .0073 grams HCl in 1 c.c.
$Na_2CO_3 + HCl = 2NaCl + H_2O + CO_2$
106 73
Therefore 106:73::x:.0073 grams.
And each cubic centimeter HCl = .00502 grams Na_2CO_3.

For example, 10 c.c. of saliva neutralized .5 c.c. HCl. So 1 c.c. of saliva equaled .05 c.c. of HCl. The number of mmgs. of ammonia would equal

Table I.

Saliva from Patients with Tuberculosis of the Lungs.

Patients.	Reduction of 6 c.c. Fehling by 1 per cent. saliva.	Mmgs. glucose from 1 gram of starch digested by 1 c.c. of saliva.	Mmgs. maltose from 1 gram of starch digested by 1 c.c. of saliva.	Alkalinity of the saliva in terms of HCl. 1 c.c. of HCl = .00727 grams of NH_3.	Mmgs. of alkaline salts in terms of NH_3.	Mmgs. of alkaline salts in terms of Na_2CO_3.
A[1]	21.3	152	236.51	50.	·170	.251
B	16.86	192	298.75	37.5	·129	.188
C	11.2	289	449.7	37.5	·129	.188
D	13.8	234	354.1	25.	·085	.1255
E	12.3	263	409.2	30.	·102	.1506
F	11.8	274	426.1	30.	·102	.1506
G	13.2	245	381.2	25.	·085	.1255
H	15.6	207	322.	25.	·085	.1255
I	14.2	227	353.2	27.5	·0935	.138
J	15.1	214	322.9	27.5	·0935	.138
K	12.3	263	409.2	30.	·102	.1506
L	14.9	217	337.6	30.	·102	.1506
M	16.	202	314.3	47.	·1598	.236
N	11.8	274	426.1	26.	·0884	.1305
O	11.7	274 3	427.8	20.	·068	.1
P	14.	231	359.4	27.5	·0935	.138
Q	19.3	167	259.8	40.	·136	.2
R[1]	20.4	157	244.2	60.	·204	.3
S	14.	231	259.4	25.	·085	.1255
T[1]	22.	147	228.7	30.	·102	.1506

1 Patients in the early stage of the disease.

.00037 grams of HCl which would equal .00251 grams, in terms of sodium carbonate.

The Saliva from Tuberculous Patients.—Table 1 shows in tabular form the results of twenty individual cases examined. The physical characteristics of the saliva showed it to be thicker than normal in consistency and usually darker in color. It often contained shreds of mucus and foreign material. After filtration and dilution, the physical characteristics were practically those of the normal.

It will be noted that the amount of maltose obtained varied between 228.7 mmg. and 449.7 mmg. with 1 gram of starch digested by 1 c.c. of saliva. The average digestive power for the twenty cases was 15 c.c. of digested fluid reducing the 6 c.c. of Fehling solution contained in the 50 c.c. of Pavy solution. Cases A, R and T were patients in the early stage of the disease. Here the digestive power was *less* than in the other case.[1]

The cause of the apparent contradiction to what might be expected, is not easily determined. Yet many suppositions might be brought forth to account for the fact (that the digestion is better in the advanced cases), which appear to lead in the right direction. In the first place, cases A, R and T were patients at the Vanderbilt Clinic and at the Roosevelt Hospital Out-patient Department. The other seventeen were quartered at the Seton Hospital where consumptives find a home. The former were patients who were walking about, receiving little care, other than what the Clinic could give, probably exerting energy at the expense of their tissues. The latter were in bed, under good medical supervision and nursing, and on a well regulated diet.

Another factor may explain this point. The former class of patients were probably suffering from the overwhelming effects of some toxic agent (toxin?). The secretory cells of the digestive system had to suffer with the rest of the body. It is a well known fact that the body may adjust itself to a certain extent to a certain pathological condition. No doubt that was what happened in the latter class of patients. The toxic agent either had become less poisonous in its action or else enough antagonism had been brought to bear by the body to allow the physiological functions of the organism to tend toward the normal. This exactly accords with the expressed opinion that the emaciation is less in the chronic cases than in the acute cases or at the beginning of the disease, when the body finds itself in the position of a gateless barrier into which the antagonistic bacteria are throwing forth their deadliest weapons. But the barrier becomes better fortified by having to withstand repeated onslaughts until the poisonous weapons, in some directions at least, have lost a part of their deadliness.

1 The fact must be borne in mind that the less digestive mixture used, the better is the digestion, as it takes a less amount of the digested solution to equalize the 50 c.c. of the Pavy solution.

The writer has spoken about some toxic agent. What this poison, which seems to permeate the system, is, we are at the present time unable to say. As fever was present in all these twenty cases, it is highly probable that this had something to do with the impaired digestion. (The digestion was impaired as will be shown later on.) This factor of fever may also explain to a great degree the cause of the more greatly impaired digestion in the cases A, R and T; for in any fever, any active bodily exercise, lack of rest, and lack of proper attention to the digestive organs will produce an impairment of the activity of these organs. Whether fever is due to some toxic agent, either in tuberculosis or in any other disease, remains for the future years to discover.

TABLE II.

Chittenden and Richard's Table or Normal Saliva.

	Time.	Mmgs. maltose	ALKALINITY as Na_2CO_3	ALKALINITY as Mmgs. H_2SO_4 to neutralize 1 grm. of saliva
R	Before Breakfast.....	523.4	0.173	0.83
	After Breakfast.....	511.8	0.127	0.61
M	Before Breakfast.....	585.0	0.117	0.56
	After Breakfast.....	468.6	0.102	0.49

Investigating the alkalinity of this saliva, it was ascertained that 20-60 mmgs. of HCl were required to exactly neutralize 1 c.c. of saliva. This alkalinity is rather higher than normal, the average here being 40 mmg. A fact of considerable importance will be noted, that the alkalinity is greatest where the digestion is most impaired, as for example Case A where the milligrams of maltose were 236.51 and the alkalinity 50 mmg. of HCl needed to neutralize the fluid and O where

TABLE III.

Saliva from Ten Healthy Persons.

Patients.	Reduction of 6 c.c. Febling by 1 per cent. saliva.	Mmgs. glucose from 1 gram of starch digested by 1 c.c. of saliva.	Mmgs. maltose from 1 gram of starch digested by 1 c.c. of saliva.	Alkalinity of the saliva in terms of HCl. 1 c.c. of HCl=.00727 grams of NH_3.	Mmgs. of alkaline salts in terms of NH_3.	Mmgs. of alkaline salts in terms of Na_2CO_3.
A	10.4	311	483.91	20.	.068	.1000
B	9.7	333	517.15	35.	.119	.1757
C	11.0	290	451.24	17.5	.0595	.08785
D[1]	10.9	296	460.58	20.	.068	.1004
E[2]	11.2	289	449.7	15.	.051	.0755
F[3]	11.1	290	451.24	17.5	.0595	.08785
G	11.2	289	449.7	25.	.085	.1255
H	10.5	308	479.2	17.5	.0935	.13805
I	10.8	299	465.2	27.5	.0595	.08786
J[3]	13.2	245	381.2	20.	.068	.1004

1 Child of twelve years.
2 After smoking.
3 *Cf.* Table I.

the milligrams of maltose were 425.8 and the alkalinity 20 measured in terms of HCl. But there was considerable variation as is shown by Case C where the milligrams of maltose were as high as 449.7 and the alkalinity 37.5 in terms of HCl.

The digestion being better where the solution approaches the normal, entirely accords with the views of Chittenden and Smith (Yale College Studies, Vol. I) and Hammarsten (Physiological Chemistry) as to the action of normal saliva. "From a number of experiments by Chittenden and Richards (*American Journal of Physiology*, Vol. I), it is seen that the variations in amylolytic power are not dependent upon the amount of alkaline salts; but that, more likely, the alkaline salts are increased where there is a greater degree of amylolysis, showing a higher degree of concentration of the enzyme" (Hays, Medical News, Vol. 84).

But there are enormous degrees of varieties both in amylolysis and alkalinity. For example, the amylolytic power is greater before breakfast than after the morning meal. This is confirmed by the observations of Chittenden and Richards and is shown in Table II. "It would appear that saliva secreted after a period of glandular inactivity, as before breakfast, is ordinarily possessed of greater amylolytic power than the secretion obtained after eating. Before and after dinner, however, the difference in amylolytic power is less pronounced, a fact which might be expected of the short period of recuperation between the breakfast and dinner and because of the more or less constant stimulation of the salivary glands during the waking hours."

But even if we take these factors into consideration, it must still be admitted that in the cases referred to, the digestion *was* impaired, as may be noted by reference to Table III of normal saliva; and also that the alkalinity was a great deal higher than normal.

Amylolytic Power and Alkalinity of the Saliva from Ten Healthy Persons.—The amylolysis in this set of experiments, was ascertained with the same precautions. The digestion was between 381.2 and 517 mmgs. of maltose, the average being 10.6 c.c. of digested fluid to react to the 6 c.c. of Fehling contained in the 50 c.c. of Pavy solution. The most impaired digestion was in Case J where 13.2 c.c. of digested fluid were used to react to the Fehling. The writer was not surprised at this as the person from whom the saliva was taken, looked as if he might be in the incipient stage of tuberculosis and was actually used as a test case. The best digestion in this series was in Case B who was a good healthy person. Case D was a child of twelve years who was taken to meet all exceptions and Case F's saliva was taken after smoking for the same reason.

It will be seen that the average amylolysis in the tuberculous cases was 1.4 c.c. of digested fluid above that of the normal set, measured in terms of the amount of digested fluid needed to equalize the 6 c.c. of Fehling solution and that over 100 mmgs. less maltose was thus obtained in the former set of cases, showing a decided diminution in digestion and in the activity of the secretory cells in the tuberculous patients.

The alkalinity in this normal series varied between 15 and 35 mmgs. of HCl, the average being 25 mmgs. Comparing this with the tuberculous

Table IV.

Saliva from Five Patients with Malignant Tumors.

Patients.	Reduction of 6 c.c. Fehling by 1 per cent. saliva.	Mmgs. glucose from 1 gram. of starch digested by 1 c.c. of saliva.	Mmgs. maltose from 1 gram of starch digested by 1 c.c. of saliva.	Alkalinity of the saliva in terms of HCl. 1 c.c. of HCl=.00727 grams of NH_3.	Mmgs. of alkaline salts in terms of NH_3.	Mmgs. of alkaline salts in terms of Na_2CO_3.
A[1]	9.	359	558.6	20.	.068	.1004
B[2]	8.9	363	564.83	15.	.051	.0753
C[3]	9.1	355	553.48	17.5	.0595	.08785
D[4]	9.2	351	547.16	25.	.085	.1255
E[5]	9.5	340	529.04	17.5	.0595	.08785

1 Epithelioma of the nose, twenty years duration.
2 Epithelioma of the lip, fifteen years duration.
3 Epithelioma of the lip, twenty-five years duration.
4 Recurrent carcinoma of breast, one year duration.
5 Carcinoma of breast, nine months duration.

cases, it is again to be noted that the average alkalinity is only one-half as great. But Case B shows the best digestion and yet the saliva was the most alkaline. It can only be taken as one of those exceptions that proves the rule. No doubt there was a greater concentration of the enzyme ptyalin than in the other healthy persons, which was proportionately equal to the excess of alkaline salts and not in an inverse ratio to it.

Table V.

Comparison of the Averages and Extremes in Digestion in the Three Series of Cases.

Series.	Amylolysis. Extremes. In terms of mmgs. maltose.	Amylolysis. Average. C.c. of digested solution to equalize 6 c.c. Fehling	Alkalinity. Extremes	Alkalinity. Average.
			Alkalinity of saliva in terms of mmgs. HCl. 1 c.c. HCl=.00727 grms. NH_3.	
1. Tuberculous.	228—449	15.	20–60	40
2. Normal	381—517	10.6	15–35	25
3. Tumor cases.	529—564	9.12	15–25	20

The less the amount of digested fluid used in titration, the greater is the percentage of sugar.

Amylolytic Power and Alkalinity of Saliva from Five Patients with Malignant Tumors.—For the matter of comparison, these five cases were taken where there was some cachexia but not as great an emaciation as in the case of tuberculosis. All the patients were the subjects of well-marked malignant disease. This is explained in Table IV. The first three cases were

under X-ray treatment, the fourth had a recurrent carcinoma of the breast which was to be operated upon and the fifth was in the Skin and Cancer Hospital awaiting operation.

The writer was prepared to meet with the same results as in the tuberculous cases, but great was his surprise to find that the digestion was *better* than normal. In this present paper it is not his duty to discuss this fact.

The amylolytic power varied between 529 and 564 mmgs. of maltose, the average being 9.12 c.c. of digested fluid needed to equalize the 6 c.c. of Fehling solution. The best digestion was in B where the saliva contained some admixture of blood which came from inflamed gums. It is seen that the alkalinity in this case was 15 mmgs. in terms of HCl and, considering that the blood contains alkaline salts, it may be assumed that the alkalinity of the saliva itself was even less than this. This again conforms with the statement that salivary digestion is better when the solution is nearly neutral.

The alkalinity of the saliva of these patients suffering from malignant disease varied between 15 and 25 mmgs. of HCl neutralized, the average being 20 mmgs.

Comparison of results in the Three Series of Cases.—Table V shows the extremes and averages both in amylolysis in the tuberculous and normal cases and in the cases of malignant disease. Comparison of the amylolysis in terms of maltose, shows that the degree of digestion in the tuberculous cases is far less than in the other two. In fact we see that there is a difference in the lowest extremes of 153 mmgs. of maltose, comparing the result with the normal; and a difference of 301 mmgs. of maltose, comparing it with the last set of cases. The best digestion in the tuberculous cases was only 68 mmgs. greater than in the lowest of the normal cases; and it must be remembered that this low normal case was already commented upon (Case J, Table III) a few pages before. Taking the next lowest normal, we find it to be 449.7 mmgs. of maltose, *which exactly equals the best digestion* in the first set of cases.

Taking the average digestion in terms of the number of cubic centimeters of digested fluid needed to equalize the 6 c.c. of Fehling in the 50 c.c. of Pavy solution, the result is noted that the digestion in the tuberculous cases is 15 c.c. against 10.6 c.c. in the normal, showing a digestion of one-half again as much in the latter set of cases.

A comparison of Series 1 and 2 with Series 3 shows a still more astonishing result. The variations in amylolysis in the tumor cases was comparatively slight, being between 529 and 564 mmgs. of maltose. Even the lowest set of figures was higher than normal and therefore much higher than in the tuberculous cases. The differences between the lowest figures in Series 1 and 2 is 148 to 47 mmgs. of maltose. And the difference between Series 1 and 3 is 301 to 115 mmgs. of maltose. But even this digestion in the last set of cases is not too high for normal as is shown by comparison with Table II. And considering that the class of persons in Series 2 and 3 were different, but the same in Series 1 and 3, the discrepancy may thus be partially accounted for. Taking note of the average in terms of the amount of digested fluid used to equalize the Fehling solution, we find 9.12 c.c. against 15 c.c., the digestion being over one-half again as good in the tumor cases as in the tuberculous cases and almost one-tenth better than in the normal cases.

A comparison of the relative alkalinity is now in order. In Series 1, the extremes were 20-60 mmgs. in terms of HCl neutralized, the highest being 25 mmgs. above the highest in Series 2 and 35 mmgs. above the highest in Series 3. The least alkalinity did not approach the neutral point by 5 mmgs. to what it did in Series 2 and 3, showing that even taking the extremes, the tuberculous saliva was more alkaline than the saliva in the other two sets of cases. Taking the average, we find the alkalinity one and one-third times as great in the first as in the second series and twice as great as in the third series. This again agrees with the assertion that the salivary digestion is better where the saliva tends toward the neutral.

Conclusion.—We have definitely proved that the saliva of patients suffering from tuberculosis of the lungs is greatly impaired in digestive power. The salivary digestion being impaired, the question now arises as to the condition of the secretions of the rest of the gastro-intestinal canal. It seems to the writer perfectly feasible to take the salivary digestion as an index of the activity of the other glands of the gastro-intestinal canal (as stated before), first because the secretory centers of the whole digestive system are so closely associated, and secondly because a pathological state of the saliva means a profound alteration of the digestive system.

In accounting for the cause of this impairment in digestion we can but theorize. The presence of a specific toxin in tuberculosis has not yet been proved to exist. And yet the alteration in metabolism in this disease appears to be due to the effects of some toxic agent which is either the specific toxin of tuberculosis or else is the result of the febrile process. As was noted before, all the tuberculous cases examined had some fever. There was no fever present in the individuals in the last two series. Is it not possible then, for the diminution in digestive power to be due to the presence of this febrile process since we know that in fevers in general there is an alteration in the digestive mechanism?

The statement has been made to the writer that patients suffering from tuberculosis are fed frequently and in great quantities and that these same patients appear to be able to absorb and

assimilate all the food given them. Can this be possible if the digestive juices are impaired? It certainly is possible if we assume that it is the quality and not the quantity of digestive secretion which has suffered in tuberculosis. If the glands, by constant stimulation from an increased diet are capable of secreting an extra amount of fluid, digestion can then be accomplished to meet the varying needs of an increased metabolism. But one of two things must happen under these circumstances. Either the digestive system must wear out under the increased toil or the body must accustom itself to the increased labor. If absorption and assimilation of food does take place under the increased feeding in tuberculosis, it is probable that the digestive system of the patient accustoms itself to the increased toil and secretes more fluid but fluid of a poorer quality.

The question has been asked "If the variations in normal saliva are so great and the excursions so extreme, how is it possible to make a just comparison?" The experiments enumerated invalidate this point, for it is shown, even taking the extremes into due consideration, that the salivary digestion in tuberculous cases is diminished.

Noting the alkalinity, we find it greater than in the normal cases, but still the same rule holding true that the digestion is better when the saliva approaches the neutral point.[1]

Turning to the cases in Series 3, we find the digestion is better than normal. As emaciation is often present in these cases, it must certainly be due to some other cause. It has been claimed that the emaciation in malignant disease (other than in the intestinal canal) is only present when ulceration takes place, and then is probably the result of micro-organisms which elaborate some toxic agent. As none of these was an ulcerative case, this point is negatived. Why the digestion was better than in the normal cases, it is not our present purpose to attempt to explain.

As digestion is impaired in these tuberculous patients, the explanation of the loss of flesh and strength is comparatively simple. Digestion being less, assimilation of food is more difficult. The metabolic activities of the body are altered and the organism has to draw on its own supply of fats, carbohydrates and proteids. In the more chronic cases, the organism has accustomed itself to the altered condition, and so the digestion is better than in the early cases.

1 It has been proposed that if there is a toxin generated by the tubercle bacillus, it may have the direct influence in inciting a greater alkalinity in the tissues, thus making the saliva more alkaline, and, in the same way, decreasing the free HCl of the gastric juice. If this theory be true, the blood also would contain more alkaline salts and therefore be capable of eliminating more products of increased tissue metabolism. Carrying this theory still further, the other tissue cells would suffer as well—the muscles in activity would be less acid and the urine would tend toward the amphoteric point. This theory (which needs decided proof) would thus explain in great part the interference with the metabolic activity throughout the whole body, by showing that the increased alkalinity on the one hand impairs the activity of the digestive fluids and, on the other hand, increases the energy needed for the elimination of waste from the organism.

THE SILVER SALTS IN GONORRHEA.[1]

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THERE can be no doubt that the use of the organic silver salts has opened up a new era in the therapeutics of gonorrhea. The fact that solutions of these salts do not coagulate in albumenoid solutions is set forth as one of their chief characteristics, and is claimed to result in the greater penetration of these solutions into the deeper layers of the mucous membrane, thus producing a direct bactericidal action upon the gonococci.

Extensive clinical experience cannot fail to cast some doubt as to the latter contention. In spite of the use of strong injections of these remedies, extending over a considerable period of time, and followed by an apparent cessation of the urethral discharge and absence of gonococci, there are many cases where, after the lapse of two or three weeks, a discharge containing gonococci again appears. This is often the experience in first attacks, where there is no great likelihood of marked organic changes in the mucosa. It might be well to consider the pathology of an uncomplicated gonorrhea.

As Bumm and others (Brewer, in Morrow's "System of Genito-Urinary Diseases," 1893), have pointed out, the gonococci penetrate the epithelial covering of the mucous membrane, and, finding their way through and between the superficial cells, eventually reach the upper stratum of the subepithelial connective tissue. The irritation caused by this invasion results in an acute hyperemia of the part, with dilatation of the capillary vessel and exudation of serum. There is also an increased glandular secretion, with epithelial exfoliation. Later, an abundant transudation of leucocytes takes place from the dilated capillary vessels. These during their outward passage through the epithelial layer absorb and carry with them large numbers of gonococci. When the leucocytes have succeeded in removing the gonococci from the subepithelial tissue, and the gonococci invaded epithelial cells have been washed away, the symptoms begin to subside.

If this is true, then the local treatment of the disease consists in the employment of some method which will induce premature exfoliation of epithelial cells and promote local leucocytosis. This can be accomplished by various methods. The exfoliation of the epithelial layer of the mucous membrane can be increased by (1) the use of irritants; (2) the use of solutions which form albumenoids, such as silver nitrate solutions; (3) the employment of large quantities of fluids, such as the irrigations of weak solutions of potassium permanganate; (4) the employment of fluids, and with them the production of prolonged pressure.

1 Read before the Chicago Academy of Medicine, March 11, 1904.

That the last-named method is of great importance is evidenced by the following experiments. The following solutions were employed for these experiments:

Albargin, gelatose silver, 0.1 to 1 per cent. solution.
Argyrol, 2 per cent. to 10 per cent.
Argonin, casein of silver, 2 to 5 per cent.
Argentamin, 1 to 3 per cent. solution.
Largin, silver protalbin, ¼ to 1½ per cent.
Protargol, proteid of silver, ¼ to 5 per cent.
Picrotol, ¼ to 1½ per cent. solution.
Water.
Saline solutions.
Permanganate solution, 1 to 4,000 to 1 to 500.
Boric acid solution, 1 per cent.

The patient was instructed to use a large piston syringe.

The cases selected for treatment were all first attacks. All of the patients were instructed to first pass water; then to fill up the urethra with the injection, so as to produce tension; to hold in the injected fluid for from three to five minutes; the injection to be repeated five times a day.

Case I.—February 3, 1903. A young clerk, twenty years of age. Duration of discharge, four days. The discharge was profuse and purulent, containing many pus corpuscles, leucocytes, and many colonies of gonococci; not many epithelial cells. He was given a normal salt solution as an injection to be used five times a day. Upon the third day there was still much pain during urination, but the discharge was notably less, contained many leucocytes, many pavement epithelial cells containing gonococci, but few free colonies of gonococci. Upon the tenth day the discharge was mucoid in character, still containing many cells, but less gonococci, and with but few exceptions all imbedded in cells. On account of the pain, I gave him an injection of protargol, one-half of one per cent., followed upon the twentieth day by an astringent solution. The patient made a rather uneventful recovery.

Case II.—February 18, 1903. Laborer, twenty-three years of age. Duration of discharge, three days. Purulent in character. Contained many leucocytes and many free colonies of gonococci. Was given an injection of potassium permanganate, 1 to 2,000, to be used five times a day. The third day showed decided decrease in the discharge, and many epithelial cells, a few red blood corpuscles. Painful micturition. Sixth day, more epithelial cells. Contained gonococci, less pus. Eleventh day, mucoid discharge; few gonococci, mostly cells. Twentieth day, no gonococci. Given astringent injection. Used for two weeks. No return of discharge.

Case III.—March 5, 1903. Traveling salesman, aged twenty-nine years. Duration of discharge, six days. Discharge profuse and purulent; marked swelling of the meatus. Discharge contains much pus and many free colonies of gonococci. Injection; used protargol, one-half of one per cent. Upon the third day, some decrease in the discharge. Strength of injection increased to one and one-half per cent. Few free colonies of gonococci. Many cells containing gonococci. Tenth day, mucoid discharge; many cells containing gonococci. Fourteenth day, still cells; no gonococci. Injection continued to twenty-fourth day. The astringent injection employed for two weeks. No return of the discharge.

Case IV.—March 22, 1903. Dentist, twenty-seven years of age. Duration of discharge, two days. Profuse and purulent. Many gonococci in colonies. Injection; used argonin, two per cent. Third day, decrease in discharge. Fewer colonies of gonococci. Tenth day, discharge slight; many cells containing gonococci. Fifteenth day, few gonococci. Twenty-fourth day, no gonococci. Still some mucoid discharge. Astringent injection used for three weeks longer. No recurrence.

Case V.—March 27. Clerk, aged twenty-three years. Discharge purulent and of four days' duration. Contains gonococci, colonies. Injection; used targin, one-quarter of one per cent. Third day, discharge still profuse, but increase in cells, and strength of injection increased to two per cent. Fifth day, decrease, with fewer colonies of gonococci. Tenth day, discharge slight; many epithelial cells; some containing gonococci. Fifteenth day, still many cells, and few containing gonococci. Twentieth day, discharge ceased. Complains of pain in passing water. Astringent injection for ten days. No return.

Case VI.—May 11, 1903. Grocery clerk, aged nineteen years. Discharge for five days; purulent and profuse; contains many free colonies of gonococci. Injection used, argentamin, one per cent. Third day, passage of water painful; slight decrease in discharge. Injection increased to one and one-half per cent. Seventh day, increase in cells; decrease in free colonies of gonococci. Fourteenth day, slight discharge, containing many cells with gonococci. Twentieth day, mucoid discharge; many cells, and few gonococci. Twenty-eighth day, no discharge. Astringent solution for ten days. No return.

Case VII.—June 5, 1903. Bookkeeper, aged twenty-three years. Discharge for two days; profuse, and painful micturition. Many colonies of gonococci; few cells. Injection; boric acid solution, two per cent. Third day, decided increase in cells, containing gonococci; fewer free colonies. Tenth day, discharge decreased; still many cells containing gonococci. Fifteenth day, discharge slight; still many gonococci in cells. Twenth-fifth day, still gonococci in cells. Thirty-fifth day, no discharge; astringent solution two weeks. No return.

Case VIII.—September 23, 1903. Clerk, aged twenty-eight years. Discharge for three days. Quite profuse. Containing many free colonies of gonococci. Injection of distilled water, colored with methylene blue, 1 to 10,000. Third day, discharge free, but more cells containing gonococci. Tenth day, urination painful; discharge

slight; many cells containing gonococci. Fifteenth day, slight discharge, but still gonococci present. Treatment with water discontinued on account of pain. Argyrol used for two weeks. Subsequently astringent solution for two weeks.

Case IX.—November 16, 1903. Bookkeeper, aged twenty-four years. Discharge for six days; profuse, and purulent, containing many free colonies of gonococci. Urination painful. Argyrol solution, two per cent, used for injections. Third day, pain ceased at once, and discharge slight, containing many cells, gonococci imbedded in some of them. Sixth day, discharge almost ceased; some cells; few of them containing gonococci. Tenth day, no gonococci. Argyrol injection continued to twentieth day, followed for eight days with astringent solution. No recurrence.

Case X.—December 5, 1903. Clerk, aged thirty-one years. Duration of discharge, five days. Purulent and profuse. Many colonies of gonococci; few cells. Picrotol solution, one-quarter of one per cent. used for injection. Caused some pain. Third day, many cells containing gonococci; few free colonies. Sixth day, marked decrease in discharge, mostly cells, few containing gonococci. Tenth day, slight discharge; no gonococci in cells. Fifteenth day, no discharge. Astringent solution used for ten days. No recurrence.

It will be noted that in all these cases the discharge decreased quite rapidly, that its character changed markedly and that the exfoliation of mucous membrane cells where greatest promised the earliest relief. The cases in which the silver salts were employed suffered less in subjective symptoms, and made the best recoveries. Those treated with argyrol were probably the most satisfactory.

I can hardly believe that the organic silver salts owe their beneficial effects to the penetrating power of which so much has been written, but rather to the bactericidal effect produced upon gonococci imbedded in the upper epithelial layer, which is being exfoliated, and in preventing reinfection. From these experiments, I have come to the following conclusions:

1. That solutions of the silver salts, organic or inorganic, do not penetrate the mucosa to any great extent.

2. That the prolonged pressure of any fluid upon the urethral mucosa causes temporary compression of the capillaries; that the removal of this pressure is followed by dilatation of these capillaries, resulting in an increased leucocytosis through the walls of the vessels; that the point of least resistance is the lumen of the urethra; that this induces more rapid exfoliation of mucous membrane cells, and literally carries out the infectious agent.

3. That it is upon the free gonococci thus forced into the surface layer of the mucous membrane that the silver salts exercise this bactericidal action.

URGENT ADENECTOMY DURING THE PROGRESS OF A PNEUMONIA.

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Lobar pneumonia, while self-limited, is one of the diseases that requires and demands everything that can be done to support the system. In the following instance, during its progress an adenoid operation was performed with marked benefit to the patient.

As pneumonia is characterized by an engorgement of the blood vessels of the parts affected, we can readily understand why venesection was in vogue many years ago. Urgent dyspnea is relieved to-day by means of dry cups. The treatment is one directed toward local depletion. Literature records hundreds of cases of diphtheria in which the process involves the larynx causing laryngeal stenosis and finally the pathological condition invades the lungs and causes pneumonia. The vital indication in a case of stenosis is to intubate, whether pneumonia complicates it or not. For these reasons, to produce local depletion and to relieve an important mechanical obstruction, I did not hesitate to operate.

The record of the case is as follows: I was called by Dr. L. Friedberger to see the patient, Jos. G., aged four months, with the subjoined history.

The child who had been a mouth-breather from birth, had never been seriously ill. He had always taken his nourishment fairly well, although he was never able to drink steadily, being compelled to drop the nipple from time to time. He had now been ill with pneumonia for the past four days with marked dyspnea. The mother complained that the child would not close its mouth to take food or medicine except with extreme difficulty, and, as she knew of the existence of the adenoids, she desired to have them removed immediately.

The family physician explained that the child was practically taking no nourishment by mouth and as the bowels were irritable that direction was out of the question. He thought the symptoms were intensified by the adenoids.

Upon examination, I found a lobar pneumonia, right side, upper one half of lung being involved; temperature 105° F.; respirations, 60; pulse 140. Mouth-breathing marked and child in great distress, undoubtedly increased by the obstruction to nasal respiration. The prognosis was grave, yet the mother insisted upon having the adenoids removed. The risk was carefully explained to her, still she determined to have it done, and earnestly begged as she felt that the child would be relieved.

I consented to operate. With the child held upright in the nurse's arms, I cautiously curetted out the nasopharynx, removing quite a mass of adenoid tissue, using an instrument I had made

for infants. (*New York Med. Journal and Phil. Med. Journal,* Vol. LXXX, No. 7, p. 309).

The child seemed quite exhausted for a few hours, then dozed off at intervals, and twelve hours later began to take a little nourishment.

There was no postoperative treatment; the pneumonia, naturally, was looked after. The next day the temperature was 104° F., pulse 130, respiration 40—and the mother said the child rested much better. The patient gradually improved and on the ninth day the temperature was normal. This is the only case of its kind, that I know of, that has been reported.

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MEDICAL PROGRESS.

SURGERY.

Posterior Gastro-enterostomy.—It is not long ago since one of the leaders of American surgery characterized this as an unnecessarily complicated procedure, and pointed with just pride to a long list of successful anterior gastro-enterostomies. Charles L. Scudder, (*Annals of Surgery,* September, 1904) states that it is coming to be recognized the world over that the nearer to the origin of the jejunum the anastomosis of the stomach is made, the more satisfactory is the convalescence and subsequent course. In Krause's clinic alone, out of many visited by the author was the anterior operation still being used. Kocher's method of doing gastro-duodenostomy is advantageous, because the exit from the stomach is made proxymal to the bile and pancreatic supply. Finney's gastropyloduodenostomy is similarly physiological and each of these procedures is, in the author's opinion, preferable to posterior gastrojejunostomy when possible of application. Scudder's technic is as follows: An ample incision is made through the middle of the belly of the right rectus. This incision must be long. The great omentum and transverse colon are lifted completely out of the abdomen at the upper end of the wound, thus exposing the under surface of the transverse mesocolon. While the left hand grasps the colon, the left fingers push the posterior wall of the stomach in its pyloric portion firmly against the mesocolon and a small incision is made. This incision is enlarged by gentle tearing and should be four or five inches long. The posterior wall of the stomach is picked up by two forceps and the stomach clamp applied. This is placed obliquely upon the stomach so as to avoid the important vessels. The jejunum is similarly picked up and clamped. The anastomosis is so made that the gastric paristalsis corresponds in direction to the enteric. The first or peritoneal suture is taken with curved needle and No. 3 Pagenstecher linen thread. The Cushing suture is used. The curved needle is of such size that it can be conveniently used without a needle holder. The size of the opening which is made by knife and scissors, depends entirely upon the physical conditions. An opening of from 2½ to 3 inches is ordinarily needed. The prolapsed mucous membrane of both the stomach and jejunum is excised. This is done to facilitate subsequent suture and to prevent valve-like obstructions. The postoperative treatment consists in giving small nutrient enemata, one every eight hours for two days. After twenty-four hours liquids are given by mouth and at the end of a week solid foods are allowed. Vicious cycle has not occurred in any of the author's cases. Three questions are as yet unsolved in connection with this operation: (1) the relation between the patency of the pyloris and the permanency of the new opening; (2) the desirability of the permanency, and, (3) the likelihood of an ulcer forming in the jejunum.

Surgical Intervention in Renal Disease.—No branch of surgery has received such tremendous impetus of late years as this. America has been a confessed leader. A. Yvert (*Rev. de Chir.,* September, 1904) in a leading article draws an interesting and striking analogy between the nephrotomy of Pousson and the decapsulation of Edebohls. He divides the subject into three heads, intervention in acute nephritis, in chronic nephritis, and finally in certain essentially medical affections of the kidney itself. The acute conditions which are further subdivided into those arising from ascending infection, those of a circulatory type and those of mixed type, are discussed with admirable clearness and the effect of various treatments indicated. The author seems absolutely just in his treatment of the two opposing theories or technics, as they should more rightly be called, of decapsulation and kidney incision. He traces the steps by which Pousson reached his conclusions as to the efficiency of renal section, and shows to what a degree they resemble the steps by which Edebohls arrived at a very similar conclusion in regard to decapsulation. The review of decapsulation literature up to date is very full. As to the choice between the Pousson or the Edebohls operation, the author says, that in considering the two, the brilliant researches of the English surgeon, Harrison, should not be forgotten. To this early observer the tense capsule of the congested kidney of acute nephritis bore the same relation to that organ as the iris to the eye in cases of glaucoma. Furthermore, in the opinion of the author, although decortication does not appear to present either great technical difficulties or to entail serious postoperative complications, it is, nevertheless, well to recollect, that it constitutes in every case a somewhat more difficult intervention and one certainly more grave in its possible sequels than simple section of the kidneys. A further and even greater objection to decortication would appear to be that its benefits do not begin to show themselves until at the end of eight or ten days at the minimum, whereas, on the other hand Pousson's nephrotomy gives immediate results. Continuing, the author says: "It is essential to remember that the very principle of the technic of decortication has been brought under very severe criticism from a histological standpoint, it having been shown that the supposed increase of vascularity between the parenchyma of the kidney and the perirenal tissue probably exists either to a very small extent or else not at all. The good arising from decapsulation, then, must be attributed to a release of the endonephrytic tension, or else to a stimulation of the reflex renal nervous system." Accordingly, the conclusion is that in the present status, no positive choice can be made between decapsulation and nephrotomy in the treatment of chronic nephritis.

Neurofibroma of Acoustic Nerve.—Even to-day, in the face of the brilliant successes which have attended a great number of attempts to remove cortical brain growths, the proportion in which success is ultimately attained is small. Discouragingly true is this of growths which infiltrate the brain sub-

stance. Fraenkel, Hunt, Woolsey and Elsberg (*Annals of Surgery*, September, 1904) state that in their opinions the so-called acoustic neuromata constitute a group which may properly be considered as favorable for surgical intervention. This would unqualifiedly be true were it not for the deep situation of the growth in the triangular space at the base of the brain. This is formed by the junction of the cerebellum, medulla and pons. The growth under consideration is a neurofibroma springing from the acoustic nerve as it emerges from the junction of the pons and the medulla; hence the most important symptom is referable to a disturbed function of this nerve. Tinnitus aurium, Menieres syndrome and deafness are among these characteristic signs. Inasmuch as the development of the tumor is slow, the integrity of the nerve is usually preserved for a long period. Inasmuch, however, as the pons, the medulla and cerebellum form the margins of the small triangle in which the growth develops, it is not usual that symptoms traceable directly to pressure upon these parts may arise almost coincidentally with evidences of pressure on the nerve. At this stage also the well-known general symptoms of cerebral tumor are usually well developed. The tumors vary in size from a cherry to a bantam's egg. They are covered by a smooth capsule and are nodular. They are loosely attached to the basilar membranes, so that enucleation is readily accomplished. The technic of the operation, as described by Woolsey, is as follows: A large skin flap was turned down so as to expose the lower half of the squamous portion of the occipital bone and the posterior part of the left mastoid. The occipital was bared almost to the foramen magnum. The bone was here trephined and the opening enlarged. Its outer boundary was thus the lateral sinus and its inner the foramen. The dura was opened and the left cerebellar hemisphere bulged considerably. The finger introduced forward and inward beneath this could easily detect the tumor. It felt hard and could be distinguished from the brain. It was removed piece-meal by the finger, as it was too large to take out in toto. This resulted in laceration of the cerebellum. A drain was instituted to prevent blood-clot formation. Three hours after operation, the patient died in collapse, autopsy showing that death was due to hemorrhage within the left middle peduncle of the pons. Elsberg advises operation in two stages. The authors conclude that the acoustic tumor syndrome is well defined and that the diagnosis can be made with practical certainty. The slow and essentially benign nature of the growth and its easy enucleability favor surgical intervention. Its deep situation at the base in immediate proximity to vital centers offers very serious obstacles. Improvement in surgical technic should be made in the direction of avoiding undue concussion in the removal of bone, in perfecting a method of extirpation of the tumor by which it could be removed without injury to the surrounding parts and, lastly, division of the operation into stages.

Acute Intestinal Obstruction.—No phase of any pathological condition is more apt to be fatal in its consequences than acute intestinal obstruction and certainly none calls for more active and intelligent treatment. Arthur E. Barker (*Lancet*, September 17, 1904) defines the factors in obstruction, which have to be treated surgically, as follows: (1) There are mechanical or anatomical factors; (2) physical factors, and third, vital factors. The first consideration very naturally demands the most immediate action and thorough technic. The position of the obstruction is a point of well-known importance. By "physical changes" the author includes the anemia and the venous engorgement of the different parts as well as the consequent edema, thrombosis and ulceration, one or all of which may follow intestinal obstruction. By "vital changes" he states that he refers to the most important factor of all. It may, as he says, be easy to mechanically relieve the cause of obstruction, but unfortunately, by the time the patient has reached the surgeon such changes have taken place that this does not suffice. There are swarms of bacteria and fecal material being constantly retrogated to the site of obstruction peristalsis. Great quantities of toxins are made, for which there is no escape save by absorption into the general system. Nor are the toxins alone in their migrations, for the depressed condition of the patient so enfeebles the reactionary powers of the serum and other protective agents, that bacteria themselves, migrating under these auspicious conditions to distant parts and setting up characteristic changes in them, often constitute the most serious type of vital change. The conclusions of this interesting article are as follows: (1) That hitherto too much stress has been laid upon the mere removal of the mechanical stoppage and not enough upon the evacuation of the putrid material, which is killing the patient; (2) that the older method of emptying the bowel by establishing an artificial anus is unsatisfactory, as the bowel is in a state of paresis or complete paralysis and only expels its contents very slowly and until it is cleaned out, the cause of the paralysis remains in great part. Any careful analysis of a long series of cases, probably in all that are still within the reach of any operative procedure, is to resect the tract of paralyzed and distended bowel at once. This would not, of course, apply to recent cases where the bowel is not seriously damaged by the retained feces and is manifestly sound at and above the seat of observation. But excluding these, there remains unfortunately a large group of cases where one is face to face with a disastrous state of things which requires very bold action. This free resection of the gut, which is viable, but in which sufficient change has taken place to paralyze its muscular activity, implies a wide and far-reaching departure from the usual course. It is well known that paresis is one of the most difficult conditions to treat when the intestine is seriously affected. It may, however, be that it is as desirable to resect palsied gut as to remove that which is dead. The after-treatmetn of these cases the author considers to be of extreme importance, and it is as revolutionary as his technic. He invariably sits them up in bed, often from the first day. Hitherto he believed that too little food had been given by the mouth. If in small quantities and of an easily digestible nature, it may be given safely with a greater degree of freedom than usually believed. This is particularly true of those cases in which the diseased bowel has been resected. The diarrhea, which often subvenes in these cases, is often troublesome, but since it represents nature's efforts to free the body from putrid material, it is not wise to check it too early. He advises large and continuous doses of carbonate of bismuth.

Appendicitis Complicated by Duodenogastric Ulceration.—Although the pathological conditions which lead to the condition are unknown, it is a well-recognized fact that ulceration of the stomach and of the duodenum is prone to be provoked, or, at any rate brought into activity by operation for the relief of other conditions. H. A. LEDYARD and R. E. SEDGWICK (*Lancet*, September 10, 1904,) report a post-mortem finding on an appendectomy case as follows: On the pancreatic surface of the duodenum was a large ulcer, the base of which was formed by pancreatic substance, in the midst of which opened two vessels of the third degree. There has been nothing unusual in the history of this appendectomy, except that hemorrhage from the bowels began about three days after operation and continued for twenty days. Rodman has suggested as a cause for this a septic thrombus in the omental vessels, and in support of this, it is noteworthy that in the case recorded the great omentum was adherent to the abdominal wall. The authors report a second case of a similar nature.

PATHOLOGY AND BACTERIOLOGY.

Arteriosclerosis in Nephritis.—In order to determine if arterial changes are always concomitant with intestinal nephritis, P. PRYM (*Virchow's Archiv*, Vol. 177, No. 3) examined the vessels of two young individuals who had died of Bright's disease, and who had not exhibited any clinical symptoms of arterial change during life. In both cases severe lesions were encountered in the smaller branches, most markedly in the afferent vessels of the kidneys, the intima was distinctly hyperplastic and fatty degeneration was very evident. It is probable that genuine morbus Brightii without beginning arteriosclerosis does not exist.

Syphilitic Aortitis.—D. FAHR (*Virchow's Archiv*, Vol. 177, No. 3) has often observed inflammatory changes in the aorta which manifest themselves as small infiltrations around the vasa vasorum of the adventitia. This infiltration may extend to the media and may become so intense that portions of the media are destroyed completely. The etiology of this process is very frequently syphilis, but it must not be forgotten that alcoholism and certain infectious diseases may be responsible for exactly the same lesions. Hence syphilis can never be diagnosed absolutely from the condition of the vessels, but if the granulation tissue of the media changes into connective tissue, which has a tendency to form a deep, retracting scar which manifests itself microscopically as a puckered depression, the case is very suspicious. Even extensive inflammatory changes alone in adventitia and media will not enable a diagnosis.

Fibrinous Coagula upon Placental Surface of Chorion.—Chorionic villi are generally covered by two layers, a cellular layer consisting of the cells of Langhans and a syncytial layer of nucleated protoplasma, without differentiation into cells. Where the syncytium clothes the villi the chorionic surface shows numerous capillaries; where it is absent and in its place a layer of fibrin is found, the capillaries are very scarce. The presence of the syncytiums is therefore dependent upon the existence of a capillary network in the opposite fetal connective tissue. Both disappear completely during the second half of pregnancy, and the syncytium is replaced by fibrin. Syncytium and fetal capillaries thus belong together, and the exchange of food and waste material between mother and the epithelial layer of the fetus is probably carried on by the syncytium. J. BILAND (*Virchow's Archiv*, Vol. 177, No. 3) states that the fibrin is derived from the maternal blood. The syncytium normally prevents coagulation, but when this disappears the blood will come in contact with the cellular layer which directly favors clotting, owing to the presence of a special enzyme. The cells will finally undergo coagulation necrosis and disappear. Later on the fibrin will lose its property of staining with specific stains, and will become canalized, owing to the activity of leucocytes.

Cirrhosis of the Liver from a New Standpoint.—In examining a large number of stomachs at autopsy, F. BLEICHRÖDER (*Virchow's Archiv*, Vol. 177, No. 3) was struck by the close resemblance of the gastric lesions of cirrhosis of the liver and with those of blood diseases, such as pernicious anemia and leucemia. In following up the subject, the author found a number of other points of resemblance. Thus, a marked anemia is often present in cirrhosis, and the red cells do not form rouleaux. Both cirrhosis and leucemia are often accompanied by ascites, and the splenic tumor in the former disease is certainly not due alone to stasis of the portal blood, for it is often well marked before other signs of portal obstruction are present. Furthermore, the spleen is much softer than it would be in simple congestion, and the veins contain many lymphocytes. An important point is the usual occurrence of red bone-marrow in cirrhosis, where normally yellow marrow exists. There is little evidence to assume that cirrhosis is a primary disease of the liver cells, for even in advanced cases their functions are preserved, that is, bile and urea are still formed, and the carbohydrate mechanism is not interfered with. It is much more rational to assume that cirrhosis belongs to the class of blood diseases, and that the characteristic lesions are due to the transport of lymphocytes from the spleen. These cells then migrate through the vessel walls, collect around the portal veins in the liver, and are finally converted into connective tissue. The same process, to a lesser extent, is seen in many acute infectious diseases where a hyperplasia of the spleen exists, and some of the lymphocytes are carried into the liver. The different forms of cirrhosis described are probably analogous in their origin, and transition forms occur frequently. The connective tissue is never pure, but is always mixed with round cells, a small number of which persist even in advanced stages. Variations in size and appearance of the liver do not depend upon different forms of inflammation, but merely upon the eventual distribution of the connective tissue. If jaundice occurs it is not obstructive in nature, since the gall-bladder always contains bile, and the passages are patent. It must be explained by the disintegration of red blood cells so common with all blood diseases, and has thus the same origin as the pigmentation, the deposit of iron in many organs, the anemia and the increased excretion of urobilin so frequently found in cirrhosis. Other organs may also participate in the hyperplasia, such as the kidneys, and where diabetes also exists, the pancreas. The process in these organs is precisely the same as that in the liver. Banti's disease should not be looked upon as a disease by itself, but merely as a form of cirrhosis. The proper therapy of cirrhosis is by arsenic, iron and quinine just as in anemia.

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SATURDAY, OCTOBER 15, 1904.

CAUGHT RED-HANDED.

From time to time the Medical News has called editorial attention to the widespread and flagrant custom of drug substitution carried on by many retail pharmacists in this and other cities.

In many of these instances, as we have pointed out, the druggist has been the victim, at times innocent, at times apparently not unwilling, to the commercial argument of "something just as good," at a greatly reduced rate.

As intimated, this has been going on for a number of years, particularly for the proprietary remedies, but it has only been since the introduction of the modern synthetic analgesics and antiseptics that the rascally substitutors have enlarged their sphere of activities and practically preempted the market in this class of goods.

Heretofore all attempts to put a stop even to the more flagrant types of this traffic have been abortive, but we are pleased to learn that through the activities of some of the more sinned-against foreign drug houses a wholesale roundup of the counterfeiters has been successfully brought about, and we look for a proper treatment by the courts of these most malevolent criminals.

A brief glance at the list of the remedies which were actually found in process of manufacture, with false labels, false contents and improper directions, shows that many of our most trustworthy drugs are among them. Trional, aspirin, lactophenin, chloralamid, salol, phenacetin, salipyrine, sulphonal, urotropin, aristol, and a number of others, equally important remedies, were among those counterfeited.

While not oblivious to the importance of the great commercial loss that must result to the legitimate manufacturers from such wholesale substitutions, the widespread injury that results to the public is, we believe, of far greater importance.

Such a traffic, if permitted to continue, works devastation in many directions. It undermines the confidence of the patient in his physician, to the detriment of his patient's health, the physician is deterred from using well-established remedies, and in many instances substitution will actually cause death in patients who are seriously ill. It does not need great acumen to foretell that a dose of sulphonal given to quiet a patient ill with pneumonia, may cause death if over 80 per cent. of it is the impure and highly poisonous acetanilid; and this is one example only.

It is a matter for true congratulation if this murderous traffic can be stopped. We commend to the attention of the District Attorney the leaders of this gang of substitutors, and offer our hearty wish that they be prosecuted to the full extent of the law. Premeditated attempt to murder is a justifiable charge.

THE HEART AND AORTA IN CONGENITAL SYPHILITICS.

As investigations on syphilis multiply, it is becoming more and more certain that this disease spares no anatomical system of the body. Besides the vulgar lesions of the bones, skin and viscera, one knows that the nervous centers may be directly or indirectly attacked, as in tabes or general paralysis. Degny (Thesis, Paris, 1903) has shown by a large number of documents, that the circulatory apparatus is also involved in syphilis.

Numerous are now the instances where syphilis has produced myocarditis, cardiac sclerosis, endocarditis, and pericarditis, while Degny's study of aortitis and aortic aneurism shows that in about 50 per cent. the affections have a syphilitic origin. This authority has also described cardio-aortic syphilis, to which particular attention should be given. In point of fact, it can be shown that congenital syphilis may attack the cardio-aortic apparatus in three different ways, namely: (1) By producing syphilitic lesions in the myo-

cardium, just as is observed in the adult; (2) by favoring degenerations which are by no means syphilitic in nature, but whose primary cause appears to be due to the presence of the syphilitic virus, and (3) dystrophic lesions especially attacking the development of the heart and its valves.

Clinically, the latter group is by far the most important, and here may be included more particularly mitral stenosis, whose nature has so often been discussed, and which has usually been considered a lesion of hereditary tuberculosis. Degny relates several cases where the cardiac lesions coincided with various malformations, indicating in a most evident manner, a particular state of degeneration. As has been pointed out by Rendu, in these subjects the condition is more one of degeneration than of syphilitic manifestations in an active state.

In the second group one includes certain changes in the cardiac muscle fibers which are not specific, but which are found in cases of congenital syphilis. And, lastly, in the first group gummata of the myocardium and arteritis in various forms are found.

Houchard believes that there is reason to question whether or not congenital syphilis is not responsible for the production of aneurism more frequently than has generally been admitted. The question is still undecided, but he nevertheless thinks that it has been answered in the affirmative because no small number of cases of aortitis met with in young subjects or adults, as well as aortic and cerebral aneurisms, having no evident cause, are in reality the products of congenital syphilis.

It may be said that besides those lesions of syphilitic nature such as gummata, aortitis, endocarditis and myocarditis, all other lesions observed are parasyphilitic, and, in their production, several important factors enter into play.

In the first place, in nearly all cases one should incriminate a defect in nutrition, an organic loss of power in the newly-born syphilitic, whose development, from this very fact, is hindered, and who, still more, is placed in a most excellent condition of receptivity for secondary infections.

In point of fact, if clinically, under certain circumstances, and in the adult particularly, syphilis appears to be, or really is, indifferent to certain infections, as pneumonia for example, and although it does not appear to aggravate or favor their development, in the child, on the contrary, syphilitic weakness favors chronic infections. These children easily develop gastro-enteritis, athrepsia, purulent otitis, syphilitic coryza, and bronchitis.

Thus all the doors are thrown open for the reception of infection, for the production of a subacute or latent chronic endocarditis, and these in their turn are important aids for weakening the noble elements of the organism. These phenomena may easily transpire in intra-uterine life, and thus may be conceived the multiple parasyphilitic lesions that are sometimes observed at birth. Consequently, specific or superadded lesions, mechanical disturbances and general dystrophy are the principal causes presiding over the evolution of the congenital syphilitic cardiopathies.

The reason why this subject has been insufficiently studied and described is the great difficulty in making a diagnosis. The syphilitic infection may be unknown to the mother, while the infant may not present the specific cutaneous lesions, but, nevertheless, he is a congenital syphilitic, for he has contracted the disease from his father.

ECHOES AND NEWS.

NEW YORK.

New York Academy of Medicine.—There will be a meeting of the Section on Medicine on Tuesday evening, October 18, at 8:15 o'clock. Here is the interesting program: (I.) Presentation of Cases and Specimens. (II.) Clinical Reports: "Two Cases of Duodenal Ulcer with Operation," by W. L. Baner, M.D. (III.) Paper: "The Malarial Types of Infective Endocarditis," by Warren Coleman, M.D. (IV.) Paper: "The Present Status of the Clinical Value of Laboratory Tests as an Aid to the Practitioner," by John S. Thacher, M.D.

Eastern Medical Society.—The Section on Pediatrics of the Eastern Medical Society will meet on Thursday, October 20, at 8:30 P.M., at Clinton Hall, 151-153 Clinton Street. The papers of the evening will be: "Pathology of Emypema," by Edward Schnaper, M.D.; "A Résumé of 175 Cases of Empyema, Clinical Features, Prognosis and Treatment," by Henry Koplik, M.D. Discussion by Drs. Louis Fischer, Francis Huber, F. N. Wilson, A. E. Isaacs, J. Barsky, I. S. Hirsch, and others. There will also be a presentation of cases and new instruments.

Dr. Clifford Allbutt, Honorary Member of Academy.—At the close of the scientific meeting of the Academy on Thursday, October 6, President Andrew H. Smith introduced Dr. Thomas Clifford Allbutt, Regius Professor of Physic in the University of Cambridge, as an Honorary Member of the Academy.

Gifts for P. & S.—Among the gifts to Columbia University, announced during the past week, are $225,000 from Mr. and Mrs. W. D. Sloane for the Sloane Maternity Hospital and $60,000 from H. W. Carpentier, to endow a chair in the Medical Department.

St. Luke's Hospital, Utica.—St. Luke's Hospital in the city of Utica, which for the past twenty years

has been a successfully managed private hospital of fifty beds, is to have a new building on a new and better site, the gift of Mr. and Mrs. Frederick T. Proctor, of Utica. The new building, which is now nearing completion, is to have eighty beds, and is a fireproof structure of brick, stone and steel, of the most modern approved type. The entire expense of the building and furnishing is borne by this one family, and the structure completed is to be turned over to the present Board of Trustees of St. Luke's Home and Hospital. This is the largest single gift that has ever been made for philanthropic and charitable purposes in this part of the State.

PHILADELPHIA.

Medico-Chirurgical College.—Dr. William Pickett has been elected Professor of Mental and Nervous Diseases, to succeed the late Dr. F. Savary Pearce. Dr. Pickett has for several years held various responsible positions in connection with the Insane Department of the Philadelphia Hospital and is one of the most prominent of the younger neurologists of this city.

Bequest for Alma Mater.—By the will of Dr. Spencer Morris, of the class of 1871, the University of Pennsylvania receives $10,000, the income of which, to be known as the "Dr. Spencer Morris Prize," is to be awarded yearly to the person passing the best examination for the degree of doctor of medicine.

Lectures on Tropical Medicine.—The course of lectures on Tropical Medicine at the Jefferson Medical College is being delivered this year by Major Walter W. McCaw, M.D., U.S.A. The course consists of ten lectures. They are given Monday afternoons at 4 P.M., in the hospital amphitheater, beginning October 3.

Woman's Hospital Widens Scope.—The Women's Homeopathic Hospital at Twentieth Street and Susquehanna Avenue is to erect an additional building to be used as a man's ward. It has been run strictly as a woman's hospital for twenty years.

Parents May Visit Municipal Hospital.—In the future parents who have children under treatment in the Municipal Hospital, for any disease except smallpox, may visit them if they so desire. They will be furnished with protective suits by the city. Both phones have been installed in all the wards in order that information regarding patients may be obtained direct.

To Shorten Time of Keeping Milk.—Efforts are being made to shorten the time milk is kept before being delivered to the consumer. The idea of Director Martin is to have milk trains run late at night instead of early in the morning, thus obviating the necessity of keeping milk until the following morning as so often done at present. He says: "It is our effort to have an inspector meet every milk train and his inspection takes time. If it is not completed early enough to permit the serving of milk for breakfast, when most consumers desire it, the milk must be kept over until the next day. If the trains would come in late at night the inspectors can complete their work and release the milk in ample time for early morning distribution. The large wholesale dealers have been interested and they approve of the contemplated change. The railroads have promised to do all they can to assist."

Typhoid Epidemics in Pennsylvania.—Typhoid epidemics are in progress at West Chester and Pitcairn. There are from thirty to forty cases in the former town. A committee of physicians endorsed the action of the Board of Health in stopping a certain dairyman from serving milk. In Pitcairn there are fifty cases in a population of 3,000. As the result of inspection of the water supply by the State Board of Health, several dairies whose herds are supplied by springs containing bacteria have ceased their supply.

Report of Norristown Asylum.—The annual report of the male department of the State Hospital for the Insane at Norristown shows that of 1,175 patients on the rolls, 83 are on parole. Of these, 17 are employed as attendants in the various wards and in the refectory. Admissions for the last year were 216. Seventy-six patients were discharged restored, ten improved and three unimproved. There were 78 deaths during the year, a rate of 5.8 per cent. This is the lowest death-rate in fifteen years.

CHICAGO.

Campaign in Behalf of Tuberculous Patients.—Medical organizations of the State are planning a campaign of education and publicity for the purpose of arousing the public to the fact that a great part of the thousands of lives annually lost in Illinois through tuberculosis can be saved if the afflicted ones are sent in time to isolation camps, similar to the one established near Ottawa, Illinois. To secure the establishment and maintainance of such camps by the State is another purpose for which the movement has been started. Some of the most prominent physicians of Chicago and other cities and towns of the State, without regard to school of practice, have been chosen to organize a "Committee of Promotion" from citizens not members of the medical profession, which is expected to solicit and administer the funds needed for the campaign of education. A circular letter has been issued by the Illinois State Medical Society, the Illinois State Hoemopathic Society, and the Illinois State Eclectic Society, jointly, setting forth the purposes of the crusade and asking citizens to join in the work of promoting the movement. In this circular it is stated that seven thousand persons died of pulmonary tuberculosis in Illinois in 1903, and about half that number in Chicago alone. This means an annual loss to the State of $36,000,000, to say nothing of the attendant suffering and sorrow. The camp at Ottawa, under the administration of Dr. J. W. Pettit, of that city, is run on as nearly a self-supporting basis as possible, all medical services being gratuitous. In furtherance of the movement the circular states that the physicians of the State are ready to furnish newspaper articles, lectures before Chautauqua assemblies, teachers' institutes and other gatherings, and to render any other services that may be required of them in the cause without pay beyond the traveling and hotel expenses of the lecturers.

The Use of Bisulphide of Carbon in the Treatment of Tuberculosis.—Professor Coramilas, of Athens, Greece, read a paper with this title before the Chicago Medical Society, October 5. He gave an epitome of his work from 1891 up to the present time with the use of this agent. After detailing numerous experiments on animals with the bisulphide of carbon, and presenting a report of 64 cases, the author drew the following conclusions: (1) Bisulphide of carbon has no disagreeable effects; (2) it has a strong action against tubercle bacilli; (3) by its action as a parasiticide, antizymotic, antiseptic, dissolving, and penetrating all tissues, it cures tuberculosis; (4) it should not remain in obscurity, but take its place in therapeutics as a valuable remedy.

Some Common Errors in the Treatment of Pulmonary Tuberculosis.—Dr. Norman Bridge, in a paper with this title, read at the same meeting, said that the current methods in the treatment of the pul-

monary form of tuberculosis averaged better than those of old. Results showed this fact. The mortality of tuberculosis had been reduced in less than three decades by probably 29 per cent. of the former figure, or from 14.25 to 10 per cent. of all deaths. These results were not accidental, but were clearly due more to the better management of the pulmonary form than to any other influence. He said it was somewhat easier for the practitioner to think that quinine or cod-liver oil, or creosote, or a change of climate, some inhalations of drugs or a so-called antitoxin, was good for tuberculosis, than it was to understand that the great first purpose of all treatment was to increase the physiological power of the patient to resist the disease and destroy or circumscribe its course within his own body. With all our study and experimentation, and notwithstanding all our theories and hopes, this truth stood as the one cardinal postulate of the subject up to the present moment. Our greatest and most common error had been against this truth, and the results had been correspondingly sad. To give creosote to the extent of lowering the digestive power, or to give serum injections to the production of phlegmons and higher temperature, or to give coal-tar drugs for fever, while the patient was allowed to go on in his usually unhygienic course of life without advice of correction, was an error so awful in its results that not even confession and penance were sufficient atonement. And all practitioners had sinned in some of these directions, and some of them grievously. Every patient should be constantly supplied with outdoor atmosphere in such abundance that every successive inspiration brought a fresh dose of air to the lungs and none from previous expirations. Every one should have long hours of rest; if feverish, the rest recumbent should be almost or quite constant, for exercise increases the fever. The digestive powers should be made to do their best under the most careful supervision and direction toward improving the nutrition and possibly also the resisting power of the patient. Practitioners have believed the patients who say they could not eat because they had no appetite, forgetting that a patient could usually be led to take the right food as well as to take medicine. Practitioners have agreed with the patient's theory that an appetite is necessary, and that food must be adjusted to the appetite; whereas, the truth was that in tuberculosis the food ought to be adjusted to the patient, and the appetite to be ignored almost completely. A tuberculous patient was never helped to resist the disease by muscular development above his normal standard. A consumptive's body should always be well and equably clothed, and never be hampered or restricted by garments. Snug corsets and conventional gowns were an abomination for the tuberculous woman. Worn as they were by most such women, they frequently tipped the scales in favor of death rather than recovery. Pulmonary tuberculosis was a *long* disease, and required a long and steady course of the best hygiene an management to ensure final and lasting recovery. Climatic treatment of tuberculosis had rightly become popular the world over; yet he was compelled to the belief from abundant observation that of all the remedies prescribed for the tuberculous, one of the most unfortunate and unsatisfactory was climate as it was usually employed. Going away for climate was one of the most abused and misused of all the great measures for the sick; and so what ought to be a blessing unspeakable often became a pitiful deception and a vision of death. This misfortune was largely an error of the people, but the profession was greatly at fault about it also. In more than half of the instances where it was advised it was for the wrong kind of cases, or at the wrong time, or for the wrong people; that is, with poor regard for all the circumstances in the situation. The author mentioned a list of faults of climatic treatment. Finally, the surest proof of skill and usefulness of a physician was his capacity to turn to the benefit of the sick the simple and homely facilities that were all about them. The best results with the fewest tools was the test; and no more inviting task was ever offered to physicians than to bring to the thousands of tuberculous victims, who were unable to go properly to the better climates, and at or near their homes, the benefits of the modern treatment of this disease. And it could be done, either in their own houses or in home sanatoria, and done superbly in a large proportion of cases. If it were done, it would reduce the mortality another ten per cent., and it would be done, for the twentieth century internist was capable of it, and he must not fail.

GENERAL.

Congress of Military Surgeons.—The International Congress of Military Surgeons convened at the World's Fair Grounds with a large attendance. The congress is held in lieu of the thirteenth annual meeting of the Association of Military Surgeons of the United States and will continue during the week. It is presided over by Medical Director John Cropper Wise, of the United States Navy, assisted by Major James Evelyn Pilcher, of the United States navy. The objects of the Congress are to cultivate and maintain an international community of interest by which the services to the sick and wounded in war may be equalized, elaborated, and perfected throughout the world.

Psychoses Among Soldiers.—The hardships and bad food, as well as the nervous tension caused by the ever-present danger, all predispose the soldier in the field to nervous derangements and insanity, says the *Globe*. Russian physicians report that in the wars with both Turkey and China a large number of acute psychoses were met with, and many men who had gone mad were shot that they might not fall into the hands of Chinese torturers. During the present war, says the *British Medical Journal*, many cases of delirium have been observed in the garrison at Port Arthur. On board the Manchuria, when taken by the Japanese, were found fourteen insane soldiers.

New Hampshire Legal Civilization.—The legality of the practice of Christian Science in New Hampshire was upheld by the Supreme Court of the State. In substance the court holds that the practice of Christian Science is legal and that patients who have resorted to such treatment cannot recover any damages in case the practitioner uses the accepted Christian Science methods of treatment. It decides that Christian Science treatment is neither negligent nor deceitful, and that, as Mrs. Speed went to Mr. Tomlinson seeking Christian Science treatment, it was his duty to treat her by that method, and that she could not claim that such method of treatment was contrary to public policy.

Some Theories of Seasickness.—A French physicist, Professor M. R. Bonnin contributed an article to *La Nature* on "The Mechanical Theory of Seasickness," which was printed in that journal in its issue of September 10. He attacks the problem entirely from the physical side and tells us that when a body is swinging in space it has three forces acting upon it: (1) its own weight pulling it directly downward; (2) the centrifugal action which pulls it away from the pivot point; and (3) its inertia acting in the direction of its own motion. Considering a man on the

deck of a rolling ship as the swinging body "all of his internal organs suspended in the thorax and abdominal cavity tend to oscillate continually becoming relatively displaced from constant traction on their attachments. At certain moments the organs seem to rise, at others they appear to grow heavier, hence an effect of distress which may bring on nausea. Thus we see why the horizontal position which gives a point of rest to these organs in their receptacles, may, up to a certain point, diminish the effects of seasickness."

Looked at in the light of pure theory, Prof. Bonnin's idea certainly possesses the delightful and refreshing elements of ingenuity, but it is a theory and nothing more. It is, moreover, not a good scientific theory, for it fails to explain all of the facts in the case. Reasoning by analogy is always a dangerous process and never more so than when one is trying to explain a scientific fact. The relationship between a swaying pendulum observed on land and the swaying body of a man on a rolling ship is surely remote enough, and one wonders at the boldness of the conception. There is to be sure no exact proof of the etiology of *mal de mer* but were there one it would most likely come from the domain of experimental physiology rather than from the realms of pure mathematics. Has this good man never heard of the probable function of the semicircular canal in controlling, in part at least, the equilibrium of the body? If so he makes no mention of the fact. Dizziness and nausea are sometimes caused by irritation of the nerves of common sensation, though the relation of visceral sensations to equilibrium is very little known.. It is known, however, that interference with certain cerebral functions is a potent cause of nausea and vomiting and upon this fact depends the exhibition of several of the commoner drugs used as emetics. Professor Bonnin evidently considers seasickness a condition due to direct reflex from the stomach, and may it not be a psychical condition as well dependent upon the stimulation of the central ends of the vagus? Nothing is known concerning the communication of the vagi with the organs of hearing, yet variations of pressure on the endolymph might well account for a number of inexplicable sensory conditions. Moreover, seasickness is commonly preceded by giddiness and headache, which also point to the central origin of the affection. James has shown that among deaf-mutes, in which the internal ear was defective, rapid rotation in a swing failed to produce any untoward symptoms. Whether seasickness is dependent upon muscular, tactile, aural or visual senses, or upon all of these together, may remain unknown for many years to come, but its occurrence must be a very certain quantity for thousands of people who are willing to brave the wrath of Neptune in order to become acquainted with countries and nations lying beyond the seas.

Hygiene Congress.—The first International Congress for the Hygiene of Dwelling Houses and Homes has been called at the instigation of the French Hygienic Society, to meet in Paris on October 15 to 20. The premier, M. Combes, has accepted the honorary presidency, and specialities will discuss the various phases of domestic hygiene in six sections. The questions for one section are as to the proper construction of a city house, the garden, and the yard, the arrangements for proper supply of air and for winter heating, the disposal of garbage, and the like. Another section will discuss the same question in reference to country homes; a third will discuss the tenement problem; another schools, etc. The discussions are to be published, and a special house hygienic exhibition will be arranged in connection with the congress. There is already a general International Hygienic Exposition in Paris, running from August to the end of November.

Physicians in Russia.—While Germany has an overproduction of physicians, the reports of the Russian Ministry of the Interior complain of unusual dearth in that country, writes the *Evening Post*. The St. Petersburg *Medical Weekly* states that at present there are 21,827 physicians in Russia, of whom 21,090 are men and 757 are women. Of these European Russia has 19,188. Naturally, the cities are best supplied—St. Petersburg with 2,272; Moscow with 1,528; Warsaw with 1,043; Kiev with 689; Odessa with 613. In the Caucasus provinces there are 1,224; and in the possessions in Central Asia 459. The whole vast Siberia reports only 788. In southern European Russia there are districts where there is no physician for 100 versts around. The reason assigned for this paucity is the poor pay received, physicians being called only in the gravest cases, and many of the common people preferring the services of quacks and superstitious priests. The Military Department complains bitterly that it cannot secure a sufficient number of surgeons for the war. Rather singularly, a decrease in the number of medical students is reported from England also; the number in 1891 having been 2,405 for the United Kingdom, while the latest total enrollment is only 1,538. It will be recollected that Austria recently reported a similar state of affairs.

Extermination of Mosquitoes.—At the meeting of the State and Provincial Boards of Health of North America, held in Washington, D. C., last June, there was a discussion in regard to the extermination of mosquitoes, an official report of which has only just been issued. The following resolutions was adopted:

"Whereas, It has been established that the diseases of malaria and yellow fever are transmissible by mosquitoes of certain species; therefore, be it

"Resolved, That it is the duty of State boards of health to obtain such legislation and appropriations as may be necessary to secure drainage of swamp lands, and to treat the surface of shallow ponds and pools with such substances as are recognized as being destructive to the life of mosquitoes of all species."

Dr. L. O. Howard, chief entomologist of the United States Department of Agriculture, read a paper prepared by Henry Clay Weeks, of Bayside, L. I., secretary of the National Mosquito Extermination Society. This included the following statements: "Entomologists have disproved one of the most persistent mosquito fallacies—that mosquitoes may breed without water. This romance is heard from educated persons almost daily. Entomologists also have shown the efficiency and the rationale of oil as an exterminator. It falls upon those who state that there are other means of contracting malaria and yellow fever than by the bite of an inoculated mosquito to prove their case. The reverse has been most clearly shown. We may and should always maintain, too, that these actual diseases are not, by far, the only health reasons why mosquitoes should not be tolerated. There are, besides, the nervous irrigation, the disturbance of much-needed rest, and others of the less palpable cause of ill-health. Given, then, the certain proof we have of this menace and positive knowledge of the scientific means at our hand for its elimination, there would seem to be but one course, which should be immediately adopted and vigorously carried out, and that is, to get rid of the known conditions which cause the trouble, viz., standing water in every form—or else make

such water perfectly safe, as may be done by larvicides, or, if that may not be, by the installation of fishes. The main reliance should be drainage. It is about six years since the writer urged in the press first, the importance of drainage, as results had shown that drainage for commercial purposes had eliminated the pests; and from a close intimacy with such work since the idea has been positively established. A practical illustration of the need and results of anti-mosquito work may have escaped your notice. It is given in the *Comptes Rendus* of the Paris Academy of Sciences, and refers to the town of Ismailia, on the Suez Canal. Here formerly it was healthy. There were no mosquitoes. Suddenly they appeared, probably from conveyances of travel, and became unendurable. Between 1897 and 1902 there were 2,000 cases a year of malaria. Relief work was planned, and in one year, 1903, it reduced the cases to 200.

The Drug Frauds.—The only cause, writes the *Times*, for surprise in connection with the detection and arrest of the gang of swindlers and counterfeiters engaged in the manufacture and sale of faked drugs and pharmaceutical preparations is that it has taken so long to catch those pursuing this nefarious business. It would seem as if with ordinary detective intelligence this might have been accomplished long ago. To locate the lessee of a postoffice box should not be difficult, not should it have taken years to trace to their source circulars sent out by the thousand with a return address and a place of payment for C. O. D. orders. However, this is beside the fact. The question of police efficiency is not at the moment under consideration. The disquieting fact in connection with this startling revelation of a kind of crime which may determine the issue of life or death is not that unprincipled men should be very glad to make a dishonest profit in this way, and if the profit was large enough to incur the risk of State prison in connection with it. But the business of faking drugs is possible only with the guilty knowledge and cooperation of the druggists, wholesale, jobbing, and retail, who have bought and distributed the worthless or pernicious stuff, and who cannot plead innocence of wrong intent so plausibly as to deceive any one of ordinary intelligence. The only chance the fakir had of securing trade was to offer the false preparations at prices below those charged by persons handling them legitimately as manufacturers or agents. The druggist to whom such goods are offered at prices attractively cheap knew either that they were stolen or that they were not what they purported to be. To buy them under either assumption is to make himself deliberately particeps criminis. He might assume that they were "just as good" as the articles they imitated; but, inasmuch, as he could not know this, and was warranted in believing that it could not be true, since there would be only a narrow and unsatisfactory margin of profit in making a cheap imitation as good as the more expensive original, the druggist who has thus supplied himself and dispensed the false preparations on prescriptions is morally guilty of a crime much more serious than that of the commercial fraud of adulteration. It will do some good, of course, to detect and arrest the swindlers who supply these harmful because dangerous, or equally harmful because inert, cheap imitations of expensive pharmaceutical preparations. But it will not reach the root of the evil. As long as those who sell drugs are willing to buy these evidently dishonest imitations and vend them as the goods they imitate, there will be scroundrels ready and willing to manufacture them, just as there will be counterfeiters as long as there are persons willing to buy "green goods" or false coins. It would seem as if it were possible to begin reform in the drug trade from within—but this has seemed possible for so long that one may well despair of living long enough to see even the desire for it find expression in the discussions and resolutions of the associations which represent the business. Perhaps the physicians could assist the good work by a sufficiently emphatic expression of their views on the subject of substitution and imitation.

OBITUARY.

Dr. Joseph N. Henry, U. S. Army, died suddenly October 3 at Devon, Penn. Dr. Henry was Brigade Surgeon in the Philippines for several years and expected to return to his post after some time spent in recuperation. His body was sent to Annapolis and buried with military honors.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, October 1.

LADY CURZON'S PHYSICIANS—NIELS FINSEN AND THE LIGHT TREATMENT—A FRENCH MEDICAL PILGRIMAGE TO LONDON—THE PASSING OF THE EYEGLASS—A VICTIM OF CHRISTIAN SCIENCE.

The British public is watching with the keenest interest and sympathy the struggle between the powers of life and death, now going on over the sick-bed of Lady Curzon. In respect of medical skill, she has the best this country can offer. Watson Cheyne, who operated, is one of Lister's most distinguished pupils, and came with that great surgeon when he migrated from Edinburgh to London, nearly thirty years ago. He was for a long time Lister's assistant in his private practice, and it was owing to Lister's influence that he was appointed on the staff of King's College Hospital, where he now reigns in the place of his distinguished master. He is a typical Scot in appearance, a "son of the manse" with a truly Presbyterian austerity of manner and a full share of the "canniness" characteristic of his race. He has written much and well on septic diseases, and is a leading authority on cancer. He is a surgeon of sound judgment and a good, but not a brilliant, operator. Dr. Champneys is also a son of a clergyman, a Canon of the Church of England, and being an Oxford man, represents the culture which is here believed to be obtainable only at one of the older universities. He is on the staff of St. Bartholomew's Hospital, and is recognized as one of our foremost obstetricians; his professional character stands deservedly high. He was an ally of Sir John Williams, who has now retired from the smoke and bustle of active life, in his efforts to raise the standard of accuracy in gynecological statistics and generally improve the ethical tone of the profession. In this campaign both these champions of righteousness came into collision with Lawson Tait, at whom the "unco guid" always looked askance. Sir Thomas Barlow is an excellent all-round physician, who takes it somewhat ill that his name is still too much associated in the public mind with children's disease in which he first won

his reputation. He was physician to the household of Queen Victoria, and attended that sovereign in her last illness. In appearance, he is utterly unlike the typical fashionable physician, and he would not have described the death rattle in a queen's throat in the discreetly mysterious phrase used on that occasion by Sir R. Douglas Powell, who, in the bulletin announcing the passing away of the august patient said: "In the last few hours of life paresis of the pulmonary nerves set in, the heart beating steadily to the end."

The death of Finsen has been made the occasion of remarkable demonstrations of respect by crowned heads. Among them our own gracious sovereign has been conspicuous, having sent an autograph letter of condolence to the widow. Possibly this is to be explained as much by a wish on the part of His Majesty to please the Queen, as by any particular interest taken by King Edward in the discoverer of the light treatment. The Queen has been active in promoting the introduction of her fellow countryman's method in this country, and to her munificence is due the establishment of a light department at the London Hospital. Mr. Sydney Holland, the ruling spirit of that institution, was quick to perceive the splendid advertisement to be got out of the thing. He skilfully "nobbled" the Queen, went to Denmark in her train, and boomed the light treatment—and the London Hospital—in the press in a way which, were not charity supposed to cover the boldest advertising, might fairly be called indecent. And yet it is whispered by some who have seen the cases, that the results have been so unsatisfactory that the physicians did not care to publish them. However, this may be, no report, as far as I am aware, was published till this year when, at the annual meeting of the British Medical Association, Dr. J. H. Sequeria read a paper in which he stated that 216 cases treated by the Finsen light had been discharged as "cured." As no detailed report of the cases was vouchsafed, this bald statistical statement cannot be taken as proving much in favor of the treatment. Moreover, as the method has been in use only between two and three years at the London Hospital, any final conclusions on the subject must obviously be premature. Although Finsen himself, in his last publication, claims to have had only two per cent. of failures, it is well-known that several patients have been in attendance at the Copenhagen Light Institute ever since its establishment in 1896.

The *entente cordiale* between England and France is taking the form of fraternization among the members of the medical profession of the two countries. London is to be honored in October by a visit from a large party of French physicians, among whom are several men of note. These scientific pilgrims are to be taken to all the chief shrines of medical practice and research, and the arrangments for their hospitable entertainment are such as to dismay a person of average digestive power. It is characteristic of the pharisiasm of the profession in this country, that whereas at first the staffs of the great hospitals and the heads of laboratories were disposed to hold aloof, now when it has become clear that the thing is going to be a big success, they are scrambling to get into it. The promoters might well say, as Samuel Johnson did to Lord Chesterfield (I quote from memory): "Is not a patron, my Lord, one who watches, unconcerned, the struggles of a drowning man in the water, and when he has reached the shore, hastens to encumber him with help?"

Antivivisectors have a hospital of their own, about which the public has heard a good deal of late. The medical staff, as might be expected, is composed of men whose names are utterly unknown to the profession. One of these has now come forward—in the sensational papers—as the author of a "remarkable discovery" which is, if we are to believe his admirers, to revolutionize the treatment of defective vision. During the past twelve months, we are told, Mr. Stephen Smith, who is the author of a volume of antivivisectionist rant entitled *Scientific Research*, has excogitated what he calls a new plan of treating persons who hitherto have been obliged to wear spectacles. The other day "in the presence of a critical audience" he is said to have given a demonstration on patients whom he has treated. Cases of acute myopia, hypermetropia, and astigmatism were, we are asked to believe, shown to have been cured so far as to be able to dispense with spectacles. Some, it is alleged, are cured in a week, but in all cases the cure is rapid. According to a friendly scribe, "precisely what the method of treatment is remains the doctor's secret." It is stated, however, to consist in "manipulations of the eye"—an apt phrase which may be taken as describing the effect of the demonstration on the eyes of the "critical" spectators. An optician has challenged Mr. Smith to practice his method on half a dozen of test cases, of medium myopia, which he defines to mean cases which would need a correction of from —4.D. to —10.D. spectacles. He has further made the sporting offer that if these cases can be proved to the satisfaction of two British ophthalmic surgeons to be selected by himself and the *Daily Mail*, he will pay to a hospital the sum of $500. This challenge has been accepted by Mr. Smith, and we are therefore to have the curious spectacle of a therapeutic method in a highly technical province of the province of medicine tested "under the inspection" of the editor of the *Daily Mail!* In a statement made to a representative of another newspaper, of an even more "yellow" complexion, Mr. Smith is reported to have said that "the great bulk of cases are those of astigmatism, or errors of sight, and out of about thirty cases treated, I have found only three to be beyond improvement. Fifteen can see better than with their glasses, and are now cured, while in twelve cases the existing defects have been greatly mitigated." He added that this treatment consists in restoring the eyeball to its proper shape. "The eye defects coming under the headings of myopia (short sight), astigmatism (blurs and various errors of vision), and hypermetropia (long sight), are occasioned by various errors of shape in the eyeball. My method is to manipulate the eye, and thus correct errors of shape. This operation is painless and harmless." Mr. Smith's "discovery" would seem to threaten the extinction of the highly profitable industry of spectacle making, and even endanger the existence of specialists who profess to cure most of the ills that flesh is heir to with glasses. I do not think, however, that they need feel much alarm.

Mr. Colin Hunter, an associate of the Royal Academy and a distinguished artist, has just died under the hands of the Christian Science "healers." He had been suffering for nearly three years from cerebral softening and visceral complications. During all that time he has been under the care of Christian

Scientists. The one who was last in attendance, has stated that he was called in after six or seven "healers" had tried their powers on the patient, and the medical profession—apparently represented by homeopaths—had given the case up as hopeless. This particular "healer" claims to have cured Mr. Hunter of Bright's disease, liver disease, appendicitis, and other complaints including three paralytic strokes! Yet after all this tremendous expenditure of spiritual force the man died. Patients are so unreasonable. The case recalls that of our countryman, Harold Frederic, the well-known novelist, who died a few years ago in similar circumstances. Christian Science is said to be making headway in London, but about ninety-five of the adherents of Mother Eddy here are women and children, and the remainder are, what the poet calls, tenth transmitters of a foolish face, and sentimental persons in whom a vague mysticism has overclouded common sense. I believe the sect has not yet a church in London, although there are one or two meeting places where extracts from *Science and Health* are read to an audience, which to all appearance can lap itself in an elysium of mental vacuity akin to the Buddhist nirvana.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Surgery.

Stated Meeting, held October 7, 1904.

The President, Robert T. Morris, M.D., in the Chair.

Resection of the Greater Part of the Stomach and Transverse Colon for Carcinoma.—Dr. A. A. Berg presented a patient upon whom he had performed this operation. The man was sent to Mount Sinai Hospital with the diagnosis of malignant disease of the pyloric end of the stomach, which diagnosis was confirmed and the subsequent operation, although exceedingly difficult because of the extensive glandular involvement, had proved particularly successful in its results. All of the stomach except a small portion of the cardiac end had been removed and a gastrojejunostomy had been done using the Murphy button. During the course of the operation, the middle colic artery was ligated and divided after which the transverse colon became pale and anemic, and in consequence of this, for fear of the following, Dr. Berg considered it best to remove this portion of the gut, which he accordingly did, using here also the Murphy button. The whole operation had occupied two hours, and twenty-four hours after the operation, the patient was given food by mouth. Nine days later when the gauze drain, which had been left in leading out from the site of the duodenal wound, was removed, there was some leakage from the bowel but this had soon ceased and now, three months after the operation, the external wound was almost healed and having only a slight serous discharge. The patient is now eating full regular meals with comfort, and had gained eighteen pounds in weight. A test breakfast had been given him recently, and after the usual period only one ounce had been obtained. Dr. Berg said, that as the patient was now able to take a large quantity of food at a meal, it indicated that there must be a pouch formed for its retention.

The Value of Oxygen in Connection with All Anesthetisation. Dr James T. Gwathmey read this paper. He said, that his attention had first been drawn to this subject by the remarkable, and, to him unwarranted, difference that Hewitt, in his book on anesthetics had made between laughing gas and oxygen and laughing gas and air on the one hand, and chloroform and oxygen and chloroform and air on the other. According to Hewitt, it has never been established, beyond all doubt, that by employing a certain percentage of air with laughing gas, a better form of anesthesia can be obtained, and also that by using oxygen instead of atmospheric air a still better form of anesthesia is obtainable. In the same connection, he dismisses chloroform and oxygen by saying that he had had no experience with this combination. Dr. Gwathmey said that, theoretically, he believed oxygen to be indicated in every case where an anesthetic is used, and he had carried out a series of experiments on cats to demonstrate the application of this theory. Asphyxiation, he said, during the administration of an anesthetic, is produced by the diminution of oxygen and not by the increased amount of carbon dioxide. Pattan and Rumph had found a decrease of forty per cent. of carbon dioxide eliminated in the respiratory exchanges, and Richet had found a decrease of fifty per cent. in chloralized dogs. Berts' experiments with chloroform had shown a progressive diminution in oxygen absorbed and of carbon dioxide given off. Lorraine Smith had shown that dyspnea from change in gaseous composition of the blood may be due to a deficiency of oxygen while Richet had stated that blood which contains an anesthetic in solution, preserves, when shaken with air, its full ability for freeing oxygen. The object of giving oxygen instead of air with laughing gas, Dr. Gwathmey said, is to be able to replace the high percentage of useless nitrogen in the air by a corresponding amount of useful nitrogen oxide, the percentage of oxygen remaining the same. Cyanosis and other evidences of diminished blood oxygenization would thus be prevented. His experiments had been carried on with the Junker inhaler, which is the apparatus commonly used in England for the administration of anesthetics. In this method as now employed, there is no possibility of determining whether or not the patient is getting a sufficient amount of air at each inspiration. If the amount is insufficient, a terrific and needless strain is placed at once upon the heart, which, if repeated, could easily bring on a train of symptoms that it might be impossible to check. He had remedied this defect by placing an easily inflated rubber bag next to the inhaler and by keeping this two-thirds full, the danger had been eliminated. His experiments had proved that the combination of chloroform and oxygen practically eliminated danger from anesthesia and reduced the after effects almost to a minimum. He presented tables covering one hundred experiments to show the comparative time required to kill cats with chloroform and air, and with chloroform and oxygen. These showed that the time required in the first instance had been approximately one-half of that required in the latter case, which, Dr. Gwathmey said, suggested that chloroform and oxygen was twice as safe as chloroform and air, and was equally as safe as ether. He concluded his paper with the statement that oxygen increases the value of all anesthetics while it does not decrease the value of the anesthesia. Dr. Gwathmey then administered chloroform to two cats, giving air in combination with chloroform to one and

oxygen and chloroform to the other. The cat receiving chloroform and air died in twenty minutes, while the one receiving the oxygen was still breathing quietly at the end of fifty-one minutes when the experiment was abandoned. Another cat was given ether and air and it died in seventeen minutes. A marked difference was noted in the behavior of the cats receiving the air and those breathing oxygen with the anesthetic, in the later there being almost no muscular spasms and very little struggling and the breathing being more quiet. This, Dr. Gwathmey said, had been observed in all his former experiments.

Granulating Wound Adhesions,—A New Application in Preventive Treatment.—Dr. Frederic Griffith reviewed the histology of wound healing and said, that the healing of wounds is prevented by friction, and that this might be prevented by some substance having blood for a basis, thus doing away with powders, salves, oiled silk, etc., now in use. This, he said, would furnish a physiological non-irritating substance for coapted wound walls. He presented specimens of the peritoneum of the common gray or sand shark which, he said, if properly prepared, might furnish the desired protection. He further said, that there is a proprietary preparation on the market which is based somewhat upon the blood idea.

Dr. Griffith also presented several bone chisels which, he said, had been made to overcome the usual difficulty encountered, in that they were made much lighter in the handles than those commonly used.

NEW YORK ACADEMY OF MEDICINE.

Section on Obstetrics and Gynecology.

Stated Meeting, held October 6, 1904.

The President, A. Palmer Dudley, M.D., in the Chair.

The After-Effects of Hysterectomy on the Nervous System.—Dr. Graeme M. Hammond said, that much might be said in general concerning the effects of the removal of the uterus upon the nervous system and the manifestations of these in the subsequent life of the individual, but that he would confine his remarks to the effects upon the brain for this only was markedly influenced. The peripheral nervous system, he said, was not affected by hysterectomy to any appreciable extent. Paranoia, epilepsy, hystero-epilepsy or profound neurasthenia may follow the removal of the uterus and ovaries, but these were not the direct results of the removal. Psychoses were not produced by hysterectomy but were the result, if they followed the operation at all, of the shock due to the operation, just as these conditions might follow any major operation upon other organs or members. If delusional insanity, paranoia, epilepsy, hystero-epilepsy or neurasthenia follow hysterectomy, they would have occurred whether the operation had been performed or not. The tendency or condition productive of these nervous diseases was already present before the removal of the uterus, and this condition or tendency consisted of a defective nervous system, present since birth, or acquired at puberty, or was the result of long continued illness for the cure of which, probably, hysterectomy was considered. The surgeon should consider these pre-established conditions when considering the advisability of hysterectomy. He said in conclusion, that no disease is peculiar to women in whom hysterectomy had been performed, that the stopping of the menstrual flow had nothing to do with nervous diseases following hysterectomy, and that previous congenital conditions, defective brain or acquired neuroses at the time of operation independently causative of posthysterectomy diseased conditions of the nervous system.

On the General Health.—Dr. Eugene Coleman Savidge said, that just as in the removal of an arm or a leg after an injury, so in considering the advisability of a hysterectomy many cases are debatable when the choice lies between the removal of the uterus or death, the operation should always be performed, but that a portion of ovarian tissue should always be left. Ovarian substance is necessary to prevent the subsequent renal, cardiac and other disturbances, which so frequently follow the removal of all the ovarian tissue. In ten years' gynecological experience at Roosevelt Hospital he had found that in a large number of women, from whom the uterus had been removed, a condition of defeminization had resulted, as evidenced by the lusterless eye, the roughening of the skin and voice, increased hair growth, increased deposit of fat, and a wiping out of zest in life. The effect of the consciousness of barrenness was marked in almost every case. The more highly organized nervous systems of American women, as compared with European women, is to be considered always in the indications for or against hysterectomy, and this is particularly true of debatable cases and it should be remembered that in many conditions, treatment more conservative than hysterectomy may suffice.

On the Sexual Functions.—Dr. Hiram N. Vineberg said, that it is not possible to discuss this subject with authority, because American women will not talk of this subject. It usually had very little to do with the conditions for which women consult their physicians. Many women have no sexual passion whatever, many have a great deal and many who, because of undeveloped uteri, cannot conceive, have greatly exaggerated sexual desire. There are others, to whom the sexual act is extremely repulsive, who are very desirous of being fondled, embraced and kissed. Some writers, he said, believe that the pleasure derived from the sexual act is purely localized in the reproductive organs, and in substantiation of this they have cited cases in which the ovaries had been removed before puberty, and this had been followed by masculine appearance, hair on the face, no fat deposit in the mons veneris, etc. Other investigators believed that sexual desire is a mental process, but with this he did not agree. Among his own cases, and in the literature on the subject, he had found that hysterectomy had produced no diminishing effect on the sexual desire, while in some it had caused a marked increase, and in none of his own cases had he found that the sexual desire had diminished except where the change had been the result of the age of the patient. His conclusion was that whatever effect hysterectomy may have on the general condition of the patient, it has little or none on the sexual feeling.

Dr. Cragin, in the discussion said, that the after-effects of hysterectomy must be considered comparatively, considering the condition of the patient before the operation and the removal of the uterus only, or the uterus and ovaries produce different effects. He did not agree with Dr. Hammond in

regard to his ideas of the effect upon the nervous system, and said, that his experience had taught him that a more profound effect was produced upon the nervous system by hysterectomy than by operations upon other organs. He said, that the cases which Dr. Savidge had observed in Roosevelt Hospital, were those cases which had been operated upon when the value of leaving ovarian tissue was not so well known, and when in consequence, the uterus and ovaries had been removed entirely. This, he said, produced more profound shock to the patient, and the after-effects were more marked, than when some ovarian substance had been left. When the ovaries or a part of them are left, removal of the uterus has comparatively little effect, and that certainly when hysterectomy is done for diseased conditions, the remaining condition is vastly better than before the operation. He further said, that if the cervix is left, at the time of removal of the uterus, and especially if part of the ovaries is left, the effect upon the marital relations is very small indeed. If, however, the cervix and ovaries be removed with the uterus, a marked decrease in the size of the vagina often followed, preventing the sexual act. In considering hysterectomy for diseased conditions, he said, that the danger to the life of the patient should be considered on the one hand, while on the other were comparatively minor effects of a vasomotor character.

Dr. Goffe said, that removal of the uterus removes the child-bearing function only, and that it has no effect upon sexual enjoyment, but that the loss of possible motherhood was well worth considering. The general mental, moral and emotional condition of the woman who has borne children should be weighed in comparison with that of the one who has not. He quoted Dr. Beebe, of Cincinnati, as believing that the ovary has to do with development and that sexual desire is located in the brain, but he said, that he himself considered that the ovary is the determining factor of sexual desire. He said, that many observers who had questioned patients whose uteri had been removed, report no effects upon sexual desire, but that the general health of the patient is the true test of her condition after hysterectomy, and they have stood the test in the majority of his patients notwithstanding the numerous nervous explosions which have sometimes occurred.

Dr. W. G. Wylie said, that he removed the ovaries only for diseased conditions, never for nervous troubles, and that he did not agree with Dr. Hammond, as he believed that the removal of the uterus sometimes produced nervous conditions or even melancholia. He said that this was particularly true in women under thirty years of age. Removal of the uterus from young women frequently produced vaginismus to a very marked degree. He also said, that all of the Fallopian tubes should be removed with the uterus.

Dr. Hammond said, in closing, that the integrity of the nervous system does not depend upon the ovaries. He had seen many cases to prove this, and that he had also seen a simple curettage followed by profound neurasthenia while he had seen many, upon whom hysterectomy had been performed, possessing perfect health.

Dr. Savidge further said, that the sexual passion many times persists after the menopause which would argue against the idea of hysterectomy diminishing sexual desire.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-fourth Annual Meeting, held at Pittsburg, September 27, 28 and 29, 1904.

SECOND DAY—SEPTEMBER 28.—*Continued.*

(Continued from Page 720.)

The Removal of Internal Hemorrhoids by Excision.—Dr. Ernest Laplace, of Philadelphia, described the operation as follows: The patient is prepared as usual; placed on the left side, with the thighs flexed upon the abdomen. The sphincter ani is paralyzed by stretching with the thumbs. The hemorrhoidal area is brought into view by clamping with forceps each hemorrhoid at its upper and lower extremity, parallel with the length of the rectum. A curved Hagedorn needle, armed with No. 2 plain cumolized catgut is now passed immediately above the upper forceps, through the healthy mucous membrane, and the catgut suture is tied. The upper forceps being held in the left hand and drawn, the hemorrhoid will now be cut with curved scissors just enough to allow the cut to be closed by the immediate insertion of a continous suture with the needle just used. This first cut being closed, the hemorrhoid is again cut a little, and the wound closed by the same continuous stitch, and so the procedure is repeated until the hemorrhoid is removed, when the suture is finally tied. Should any hemorrhage occur another whipped suture is applied locally and controls it. Each hemorrhoid is dealt with in this way, until sufficient of the hemorrhoidal area is removed. Eighty-three cases have been operated upon by this method in the last four years, with most satisfactory results. Patients have been sent home as early as the second day after operation, there being no danger from hemorrhage, or sepsis, and the catgut taking care of itself and dropping out spontaneously. Delicate longitudinal scars are formed corresponding with each hemorrhoid that has been removed. The advantages claimed for the method, are precision, absence of hemorrhage, during or after the operation, safety and simplicity, as well as a minimum of pain.

Retrodisplacement of the Uterus.—Dr. Henry D. Beyea, of Philadelphia, divided the case into (1) acute retrodisplacement and (2) chronic retrodisplacement, in the former of which when uncomplicated he had found the most satisfactory treatment to be the application of a properly fitted Smith or Hodge pessary. He gave in detail the technic of the operation, and in his 465 patients, one only had died; there had been no complications attending subsequent gestations or labors, and 95 per cent. of those from whom he had been able to receive reports, have had complete relief of symptoms or improvement in health.

Dr. Charles P. Noble, of Philadelphia, in discussing this paper, stated that the only class of cases in which he had found the pessary of value was in those following labor, in which with rest treatment, about one-third had been cured. In the surgical treatment he divided the cases into the classes in which the appendages were diseased, and those in which they were normal, in the latter of which he preferred the Alexander operation. He also was favorably inclined toward the operation described by the author, but felt that the percentage of failures was somewhat larger than with the Alexander operation.

Disturbance of Menstruation and Their Significance.—Dr. E. E. Montgomery, of Philadelphia, went carefully into the causes of the flow, and considered the disturbed conditions under amenorrhea, which may be either congenital constitutional or mechanical; dysmenorrhea, which owing to the present mode of dress is rapidly increasing; menorrhagia and metrorrhagia, and viacrious menstruation, a discharge periodically from some other surface than the uterine mucosa.

Overlapping of the Aponeurosis in the Closure of Abdominal Wounds.—Dr. Charles P. Noble, of Philadelphia, said that he had first used this procedure in 1894 for umbilical hernia, and since 1897 had employed it in all incisions in over 150 cases, as by overlapping the aponeurosis in this way you can secure firmer union than by any other method.

Pernicious Vomiting of Seven Years' Duration Cured by Suspension of the Kidney.—Dr. George Erety Shoemaker, of Philadelphia, reported the case of a woman aged twenty-eight years, who had an attack of typhoid fever seven years before, accompanied by hemorrhage from the bowel and vomiting of blood, and followed by phlebitis of both lower extremities, and nausea and vomiting occurring three or four times a day and induced during the latter time, not only by taking food but by nervous excitement. These were worse near the menstrual period. During this seven years she had subsisted mainly upon infants foods, and had undergone various treatments, including rest, lavage and dilation of the uterus, the latter being followed by some temporary benefit. Upon admission to the hospital, the right kidney was found to have descended to the level of the umbilicus, replacement of which and the removal of the left tube, ovary and appendix was followed by complete recovery.

Tumors of the Cerebellum and Cerebellopontile Angle.—Drs. Charles K. Mills and Charles H. Frazier, of Philadelphia, stated that the existence in the cerebellum or its immediate environs of a tumor was comparatively easy of diagnosis, the symptoms being optic neuritis, headache, vertigo, nausea and vomiting, asthenia, atonia and nystagmus, but the localization thereof is not an easy task. The author stated that the eighth nerve was the most common seat of tumors of the cerebellopontile angle, the symptoms being impairment or loss of hearing with tinnitus, often associated with facial, trigeminal and ocular paresis on the side of the lesion, ataxia and the general symptoms of brain tumor. In conclusion, Dr. Mills insisted upon early operation, in the first place, to remove the tumor when this was possible, and secondly, when successful removal cannot be hoped for, to relieve the urgent and distressing and destroying general symptoms, such as headache and optic neuritis.

Section A.—*Continued.*

Tympanites.—Dr. J. C. O'Day, of Oil City, referred to an unfortunate experience in his first case of obstinate tympanites not operated upon. While believing with Miles F. Porter that needle puncture is unsurgical, he is convinced from an experience of two cases that the operation should be encouraged, inasmuch as its dangers are nil, and because many, untrained in the use of the knife, could resort to this simple procedure with successful result. Two cases were cited which had been treated by needle puncture with perfect recovery.

Glimpses of Auto-Intoxication.—Dr. Edwin W. Moore, of Franklin, held that the real cause of auto-intoxication is an unsolved mystery, and claimed that perverted nutrition and cell destruction affords sufficient cause to justify it a place as a causative factor in disease. He mentioned the various actions of the liver, and suggested a difference in the area of its production and that resulting from the metabolism of tissue. He separated auto-intoxication from infection by giving to the infection theorists all conditions of exogenous origin and to the auto-intoxication investigators those of endogenous origin. He admits a large field of toxemias between these extremes as unclassified and of no known definite origin. He specializes rheumatism, gout, many nervous diseases, jaundice from obstruction, Addison's disease and many gastro-enteric conditions as auto-intoxications, and questions the right of investigators in claiming anemia as an infection.

Symptomatology and Treatment of Influenza.—Dr. Samuel Wolfe, of Philadelphia, said that the history of influenza, recurring since 1889, showed characteristic deviations from the classical type, but that the affinity of the specific cause for mucous membranes and nervous structures is constantly demonstrated. There is reason to believe that certain symptoms are caused by the bacillus itself, and certain others by the toxin resulting from it, but strict differentiation is not yet practicable. The treatment aims at the control and mitigation of such conditions as fever, pain, catarrhal inflammations and central nervous derangements. Facilitating the elimination of the toxin must be regarded as important.

Pleurisy with Effusion.—Dr. J. E. Rigg, of Wilkinsburg, in this paper considered the influence of the teaching of pathological anatomy and bacteriology as causative factors and for classification, and the value of impartial clinical observations; also the frequency of pleurisy as found at autopsies, the forms of pleurisy, tuberculosis as a predisposing cause, and cold, traumatism and infection as exciting causes. The relative frequency of pleurisy with effusion to empyema was referred to. Under symptoms and diagnosis the author treated of friction, pain direct and reflected; the presence of respiratory sound and the use of the aspirator as a means of diagnosis and why it at times fails. In treatment the value of blisters in the early stage was discussed, the optional use of the aspirator, with the positive signs for the prompt use of the aspirator. The value of tincture of aconite combined with belladonna is mentioned

Pneumonia.—Dr. John R. McCartey, of Fredonia, is at variance with those advocating the expectant treatment. He brings forward spirit of chloroform, which, from thirty-two years' experience with it, he considers specific when given early. The author cited two cases. The first, seen as soon as the patient emerged from severe chill, was given 20 minims every 15 minutes for six doses and every hour thereafter; dismissed the next day. In the second case the patient was seen eight hours after initial chill and dismissed on the third day. The remedy is of no avail after hepatization is established. He usually combines aconite with it now. Salicylic acid alone will cure and abort pneumonia by its antiseptic action. Dr. McCartey gives it by absorption by dissolving it in gasoline and applying it externally. Ergot was mentioned as of much value. His mortality has been but 2 per cent.

Blood Analysis.—Dr. J. M. McNall, of Wilkinsburg, referred to the advantages of blood analysis.

The definition of leucocytosis was given with its varieties, absolute and relative, and emphasis given to the importance of relative count and leucocyte curve. Blood analysis, it was stated, was probably no more applicable than in the leucemias and anemias. Pernicious anemia was considered and its relation to secondary; its faulty hematogenesis and hematolysis, characteristic marrow lesion and cells, their embryonic type. Other generative changes and findings were given. The blood picture of anemia was given with its differentiation from pernicious anemia. The limitations and requirements of blood analysis were outlined.

Sea-Bathing.—Dr. Philip Marvel, of Atlantic City, N. J., referred to the great antiquity of sea-bathing as a curative for bodily ills. The influence of temperature, physical conditions of the atmosphere, the physical and mental condition of the individual and the fact that the water is truly a mineral water, were facts not to be lost sight of. Observations were noted of the slowing or enfeeblement of the pulse of those submerged for hours in the sea and of those immersed for a time in water at a temperature higher than that of the body with a lowering in the systemic resistance. He believes that sea-bathing, as practised on the Atlantic coast, is responsible for greater harm than good, and he believes that physicians have been too long silent on the subject. They should impress upon those under their care the advantages of a short exposure, not exceeding thirty minutes, and the necessity for prompt and positive reaction. Sea-bathing is indicated in those weakened conditions where normal metabolism is inhibited or perverted nutrition exists, and is contraindicated where the arterial elasticity has been changed or lost, as in arteriosclerosis and capillary fibrosis; also in those cases in which the peripheral vessels have ceased to respond to reflex stimuli, in any condition in which the stimulation would favor internal hemorrhage; in case of chronic heart disease and in cases in which lowered resistance necessitates more than ordinary care of the patient's forces.

Some Remarks on Physical Diagnosis: (a) Ulnar Palpation; (b) Transmanual Auscultation.—Dr. David Reisman, of Philadelphia, designated as (*a*) ulnar palpation a method of palpation which he believes gives more satisfactory results that the one commonly employed, namely: The laying on of the flat of the hand while the patient is speaking. Dr. Reisman's method consists in applying the ulnar surface of the hand and little finger into each interspace, the hand being held perpendicularly to the chest. The method enables one to discover small shades of difference in the fremitus of contiguous interspaces or corresponding areas of the two sides. It also shows accurately the upper level of an effusion and the limits of a plastic exudate. It is of most value in examining the front of the chest, but may be also used for the back. (*b*) After speaking of the difficulties of the method of timing heart murmurs and of the unsatisfactory results generally given by timing murmurs by means of the carotid pulse, Dr. Riesman described a method which overcame some of the difficulties. It consists in auscultating with the binaural stethoscope through the hand placed over the apex beat. By this method the apex beat is felt and the murmur heard at the same point and timing becomes easy. The best stethoscope for the purpose is one provided with a diaphragm. Not only is it possible to hear murmurs plainly through the hand, but almost as satisfactory results can be obtained by placing a finger flexed at a right angle on the apex and then resting the stethoscope on the finger. The principal advantage of transmanual auscultation is found in the differentiation of presystolic from systolic murmurs. It is also of use in timing musical and other peculiar murmurs heard over the chest. The successful application of the method presupposes the existence of a palpable heart. Both methods were illustrated with photographs.

Myocardial Degeneration.—Dr. Albert E. Roussel, of Philadelphia, stated that if the statistics of Schott were accepted, it would be found that diseases of the myocardium were more frequent than those of the endocardium in the proportion of 505 to 245. He believed that arteriosclerosis must be accepted as an important factor in many cases of cardiac degeneration. He considered it worthy of remembrance that at least partial occlusion of the coronary arteries due to this cause may be compensated through the vessels of Thebesius with avoidance of the otherwise resulting damage. Parenchymatous degeneration, fatty heart and allied conditions were considered with their etiology and treatment. The diagnosis of many cases of fatty degeneration the author believes, more difficult than that of a fibroid heart, and he is confident that often cases of this disease are not recognized even after a physical examination. This is because the size of the heart in simple fatty degeneration is little changed, and the area of dulness presents no alteration.

Practical Points Concerning Smallpox.—Dr. William M. Davis, of Pittsburg, in this paper emphasized the importance of taking into consideration the entire symptom complex. Contrary to some opinions, he believes the primary fever to be quite contagious. The varieties of smallpox in reference to diagnosis and prognosis were discussed. The treatment of corneal ulceration, a frequent complication, was detailed.

THIRD DAY—SEPTEMBER 29.

Section A.

Test for Blood in the Feces and Its Clinical Significance.—Dr. J. Dutton Steele, of Philadelphia, said that by occult is meant an amount of blood so small that it cannot be recognized by the naked eye or by the microscope. It has been found by certain German observers that the old guaiac test for hemoglobin can be so modified as to detect extremely small amounts of blood in the feces. They have applied this test in the diagnosis of all lesions of the gastro-intestinal tract that cause hemorrhage. It is of special value in the diagnosis of gastric carcinoma and gastric and duodenal ulcers. The blood is constantly present in the stools of carcinoma, and is intermittently present in cases of gastric and duodenal ulcer and organic but benign stricture of the pyloris. Dr. Steele reported seven cases in which the test had been applied and in which the test appeared to be as valuable as is claimed for it. He is of the opinion that the method is a distinct advance in the diagnosis of gastro-intestinal diseases, and will soon rank with such symptoms as the absence of hydrochloric acid in cancer or hyperacidity in ulcer.

Tuberculosis of the Gastro-Intestinal Tract.—Dr. J. A. Lichty, of Pittsburg, presented this contribution. The patient, thirty-six years of age, had no pulmonary signs, but had alternate diarrhea and

constipation. She had been exposed to tuberculosis for five years. At autopsy a perforation of the bowels was found near the ileocecal valve. Partial obstruction was present at the splenic flexure of the colon. The modes of infection of the gastro-intestinal tract were given as *primary;* (*a*) by inspiration, (*b*) by kissing, (*c*) by dirty objects or contaminated hands which find access to the mouth, (*d*) food from infected animals, or food which accidentally becomes infected; *or secondary,* that is, from the swallowing of sputum which is tuberculous.

The Diagnosis of Cirrhosis of the Liver.—Dr. Alfred Stengel, of Philadelphia, stated that cirrhosis of the liver is usually recognized when the disease has reached a practically incurable stage. This statement, however, Dr. Stengel said, needs some modification, for occasionally, cases not recognized until ascites and other signs of portal obstruction have developed recover from these striking symptoms and survive, which is probably due to the fact that with the terminal cirrhotic change in the liver there is always a considerable amount of cellular infiltration which is removable. The speaker referred to a certain train of symptoms met with in the earlier stages of cases of cirrhosis as well as in other conditions, and then proceeded to a discussion of the differential diagnosis. With regard to the occurrence of enlargement in the early stage of cirrhosis, the speaker stated that, contrary to the opinion of Leube, he had watched cases of cirrhosis from a stage when the liver was enlarged to the terminal contracted condition. The symptoms in congestion are practically those that usually are seen, but there is always found some adequate circulatory cause for the congestion, some form of cardiac or obstructive pulmonary disease which prevents the proper circulation of the blood, the most frequent cause being cardiac or circulatory weakness, the congestion is found to fluctuate with the fluctuations in the underlying condition. Dr. Stengel referred to the chemistry of cirrhosis and stated, that the only test that had proved of any value, and this merely confirmative, is that for urobilin. Among the conditions causing the train of symptoms met with, cirrhosis is the only one which regularly produces urobilinuria. Finally, in referring to the physical examination for cirrhosis in its more advanced stages, the speaker warned against a too ready acceptance of the results of percussion as an indication of decrease in the size of the spleen, and advocated a more general appreciation of the value of splenic enlargement in the diagnosis of cirrhosis of the liver.

Dr. David L. Edsall, of Philadelphia, referred to alimentary levulosuria as one of the chemical methods used in the diagnosis of liver disease. Strauss administered 100 grams of levulose on an empty stomach, and determined that levulose appeared in the urine in a large proportion of cases of liver disease, but in only a small proportion of cases of disease of other kinds. Dr. Edsall, from his own results and those of others, is skeptical as to the diagnostic value of this test. He emphasized the ease with which the test for urobilinuria may be carried out when the method of Hammerschlag is used. A test which Dr. Edsall has used and which he still looks upon with an entirely tentative judgment, but which has seemed to him to be quite as valuable as urobilinuria, is the determination of large amounts of phenol in the urine. He first used this test for the reason that the liver has the function of destroying the products of putrefaction that come from the gastro-intestinal tract or otherwise protecting the organism from them.. He thought that it would be worth while to determine to what extent these products of putrefaction escape into the general circulation and then into the urine in liver disease, as a loss of the liver's function, more or less complete might be indicated by their escape in abnormal quantity. Of the various substances that Dr. Edsall investigated in this connection, he found that phenol alone seemed to show reasonably characteristic changes. While this substance is variable in liver disease, it does seem to him that a very large amount of phenol in the urine is strongly suggestive of liver disease when other evident reasons for its presence are absent.

(To be Continued.)

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

SECTION ON PATHOLOGY.—*Continued.*

(Continued from Page 672.)

Some New Lines of Inquiry.—He next referred to three pieces of work which he thought opens up vistas of much significance. The first of these is the work of Meyer and Ransome. In this research these observers, extending the observations of others, have established the fact that tetanus toxin reaches the nerve cells by means of the motor axones only. They have also brought out certain very striking facts regarding the action of antitoxin. It has been usual to suppose that if a sufficient amount of antitoxin were injected, toxin might subsequently be injected freely without any disease resulting. But the observers referred to have shown that even the injection of a very large excess of antitoxin is insufficient to entirely protect an animal if the subsequent injection even of a small amount of toxin be practised in a motor nerve. From this they argue that while the toxin reaches the nerve cells by the protoplasm of the axones, antitoxin only reaches them by the very much more round-about route of the lymphatics. But much more important is their observation that even in an animal actively immunized against tetanus, and possessing a fairly potent antitoxic serum, this fact will not prevent the development of tetanus if the toxin be injected into a motor nerve. If this observation is confirmed, then it appears unlikely that, as Ehrlich had held, antitoxin is formed in the nerve cells. In this respect Ehrlich's theory was largely founded on the observations of Wassermann and Takaki on the fixation of tetanus toxin in the brain of susceptible animals. Though the validity of this observation has not been denied, yet the interpretation has given rise to much dispute, and we must admit that at present we know of no definite facts which point to the place of origin of antitoxin. If antitoxin be not formed in the susceptible cells, one difficulty which existed in accepting Ehrlich's original view is removed—namely, what becomes of the toxophorous affinities during the process of immunization when the cell is being bombarded with fresh amounts of toxin. The view that the saturation of the side chains of the cell with toxin made them drop off with their burden of toxin always appeared to him to be hardly tenable, in view of the fact originally put forward by Ehrlich that the reason for the affinity of toxin for the cell was probably to be found in the fact that the toxin closely resem-

bled the normal food of the cell. It would be of little use to the cell if a side chain should straightway drop off into the serum whenever a food particle became attached to it. The whole view was too theoretical. The second piece of modern work calling for attention as a new departure is that of Muir, which appears to him to be the most important of all the recent contributions to the interactions of the constituents of hemolytic serums. Muir has investigated further the observations of Ehrlich that in blood corpuscles probably there exist more affinities capable of being saturated by immune body than those which are actually concerned in hemolysis when complement is supplied. He has shown that when corpuscles are thoroughly saturated with immune body, it is possible to dissociate a certain amount of the immune body and to cause it to become attached to fresh corpuscles. A not unimportant aspect of this observation is the deduction following from it that an exchange of molecules can take place between cells when these cells are merely in contact with each other. Further, Muir shows that for each moiety of immune body taken up by corpuscles a corresponding amount of complement can be taken up. This establishment of a definite quantitative relationship in the reaction suggests a definite chemical reaction between immune body, complement, and red blood corpuscles, and is opposed to the view of Bordet and the French school generally that the action of immune body is what they describe as a sensitization. But Muir's most important observation here is that after red blood corpuscles have taken up as much immune body as they are capable of, and when to the combination as much complement has been added as again can be taken up, still some of the immune body but none of the complement can be dissociated from the combination, and this immune body is dissociated in the original form in which it became attached, that is, it does not bring off any complement in combination with it. As Muir points out—and the observation is of very great weight—such an experiment seems incompatible with Ehrlich's view that immune body forms a link between the red blood cells and complement. In his latest work (with Browning) Muir brings forward evidence that the lysis by complement of red blood corpuscles saturated with immune body alters the affinity of these corpuscles for the weakened complementary bodies or complementoids which can be produced from complements by heat. This observation, taken along with the earlier results, opens up entirely new questions regarding the relationship of immune body which in the near future will demand an answer. The third work to which he referred is that of Wright and Douglas. As is well known, the question of the exact part played by the act of the ingestion of bacteria by cells in the killing of these bacteria, has for long been in a most unsatisfactory position. Phagocytosis is an indisputable fact which every bacteriologist has constantly before him under the microscope, but under what circumstances it occurs, and by what laws it is governed, constitute questions to which no answer could be given. But one cannot help feeling that the investigators named have by their work given ground for the hope that before long some of the much-needed light will be forthcoming. For one thing, Wright, by the elaboration of methods of the highest precision, had previously laid the foundation for the attack on the problems on which he is now engaged. And further, thanks to the beautiful method of Leishman, we have now a means of measuring exactly the phagocytic power of a cell by counting how many bacteria it can ingest in a given time. These observers have made a weighty contribution to our knowledge of the relative parts played by the bactericidal power of the serum, and by the intracellular destruction of bacteria. They have shown that in the case of the normal man some bacteria are killed extracellularly, whilst with others the serum has no bactericidal effect, but phagocytosis is the prominent feature when these bacteria are introduced into the blood. Wright and Douglas have further shown that, when bacteria are ingested, in the case examined these bacteria are previously sensitized by union with a substance existing in the plasma, and which Wright and Douglas call an opsonin. What these opsonins are, and whence they come, is a matter for the future, but any one who has had to plod wearily across the acres of barren papers which have hitherto formed the literature of phagocytosis will feel that the edge of the desert has been at length reached.

While the precise inter-relations of the substances concerned in the actual killing of bacteria, and, it may be, the possible variations in the processes at work in individual cases must occupy much attention in the near future, the work of Wright and Douglas raises another question, namely, of how far the struggle between bacteria on the one hand and the bodily cells on the other does not involve in the case of the latter a symbiosis between different types of cells or between different activities of the same cells. The attempt to answer this question, taken along with all the existing evidence for the idea that cells work through the agency of chemical substances will inevitably lead to a closer inquiry than has hitherto taken place into the sources of the, it may be, varied substances which require to come into activity in any one case. And it is here that our discussion to-day touches very closely that of to-morrow on the rôle of the lymphocyte. The outstanding feature in an infection is the state of embryonic activity into which the wandering cells and endothelia of the body are thrown. Part of this activity may be toxic in origin, and may be looked on as the result of an injury to cells, part may be of the nature of a response to what may be called physiological injury, that is, an injury which results in more work being done. We are ignorant of the true nature of the principles underlying this process connected, as it must be, with hypertrophy as a whole. At present we can only admit as a fact that when a tissue requires to do more work more work is done. In the present case the greater work done by the increased number of cells may be partly of a mere scavenging character. The result may only be that the toxic remains of bacteria may be swept out of existence. But part of the work may be the elaboration of the chemical substances required for the active killing of bacteria or for the building up of antitoxic material. Prima facie there is a case for the wandering cells of the body and especially the leucocytes playing a part in these processes. What exactly that part may be and whether other cells in the bodily organs also take most striking at present is that with all the work which is being done in hematology, we still require more light on the nature and functions of such cells and, especially in relation to immunity, we need parallel observations in which the chemical proper-

ties of the blood are correlated with its microscopic character. Much help might also come from further study of the comparative morphology of the leucocytes, and here the work of Gulland, and lately of such workers as Hirschfield and Meinertz, has opened up the way for further advance. In this connection the most striking feature seems to be the fact that in nearly all mammalia, and even in many fishes and birds, the cells most uniformly found are of the type of which the large hyaline cell and the small cell with basophilic granules in its protoplasm, occurring in man, are the most familiar examples. But the most interesting fact that comes out from this study is the extraordinary diversity which occurs in the animal series in the cells of which the polymorphonucleate cell is the type. With regard to them, we are still far from appreciating what the significance of minute differences in form and granulation signify. Some light might come on this problem by the comparative inquiry involved in the study of the same infection in animals with corpuscles of different forms. Whatever line of research here is fruitful, it is certain that the study of immunity will not be complete till we know not only the substances concerned in the processes of high immunization and of ordinary resistance to a first attack of disease and the interrelation of these substances, but also the sources from which these substances are derived and the laws which govern their formation. From our present standpoint, no knowledge would be in this connection more interesting or important than the knowledge of the precise part played by wandering cells in the nutrition of the lower forms of life. As Ehrlich pointed out, both toxins and the constituents of the bacterial protoplasm must in chemical composition closely resemble the ordinary food material of animal cells. The further fact of the existence in the blood serum of substances closely allied to immune bodies points to a close relationship between the principles underlying immunity and some process of ordinary metabolism. The only other view which might be put forward is that the qualities to which immunity is due have come from the survival of the most immune. Such a hypothesis is difficult to maintain in view of the ease with which new and artificial disease conditions can be brought into existence at the will of the pathologist and of the conditions of natural immunity which are found to obtain against these artificial diseases. All the facts indicate that when the subject of immunity begins to be more clearly opened out it may be found that the methods by which the effects of an invading bacterium are met are merely special manifestations of the normal interdependence of groups of the bodily cells one on another.

Historical Résumé.—In continuing the discussion William Bulloch, of London, gave an excellent historical and critical summary of the various sides of the general subject without indicating more than the drift of the present series of inquiry.

Agglutinins.—Georges Dreyer, of Copenhagen, spoke of some results obtained in the study of the agglutinating substances of the colon bacillus. Agglutination by heat, by acids, and by alkalies, were discussed.

Section on Tropical Medicine.

Prophylaxis of Malaria.—An important discussion of this topic was taken up by Drs. Jos. Stephens, Rose, Duncan, James, Christopher and others: Dr. Stephens said, that it may help to make more precise his views if, instead of recounting the methods of prophylaxis used and the results achieved in Italy, in British, French, and German tropical possessions, in Japan, he considered some scientific aspects of the problem which in many of the publications on this subject seem to have been overlooked. It is, he thought, not unnecessary to point out even now how malaria is contracted. It has been for centuries believed that malaria is contracted from the vapor of marshes; and now that certain mosquitoes are proved to be the cause, it is not uncommon to overlook the means whereby the mosquito produces malaria, and still to attribute malaria to the presence of the water in which the mosquito breeds, the "shallow pools," etc. It seems that this is to take a wrong standpoint, that the public should be educated to regard not the pool, not the mosquito, not even the anopheline, as the source of danger, but the infected anopheline; and he would go further: he would have everybody clearly understand how it is that the anopheline becomes infected—that is, can convey malaria. It results from the fact which, he believes, not 1 in 100 laymen in the tropics knows—that malaria is a contagious disease. The source of contagion unsuspected by the laymen lies in the fact that in the tropics the native population, especially the child population, carries malaria parasites in its blood; that it does so, often while presenting not the least outward sign of sickness. It is this apparently healthy but actually highly infected population which is the great source of malaria parasites, and hence of danger, to the European. It is from the native that the malaria-bearing mosquito gets its parasites, and these it transmits again after the lapse. The native population may show no outward sign of sickness. The native also dies from malaria, but if one wishes to see malaria in its severest forms, let him visit some up-country miner's camp or Europeon settlement in the bush. There he will find those "malarial wrecks," the fever-stricken pioneers, "down with fever," as it is called, vomiting incessantly, with a temperature of 105° F., in constant dread of black-water fever, which not uncommonly supervenes. Those who live in the towns not uncommonly forget that it is in these out-stations that malaria exists in its most virulent form. He dwelt on this condition, because it is the lot of these unfortunate Europeans to fill the "white man's grave," because he thought that in schemes for eradicating malaria they are forgotten.

Contagiousness of Malaria.—Malaria is a contagious disease. It has been the great discovery of Ross, that it is a certain mosquito that conveys the contagion. We know that certain mosquitoes, of the subfamily *Anophelina*, alone can convey the contagion. Of anophelines there exists about a hundred species. Which of these, or do all of them in different parts of the world convey malaria? It is surprising that on this point there is but scanty information.

The number of species that are known to convey malaria may almost be counted on ten fingers. They are in Europe—*A. maculipennis* (mainly); *A. bifurcatus* (less concerned); *P. superpictus; M. pseudopictus* (especially in some parts). In Africa *A. maculipennis* (in Algeria); *P. costalis* and *M. funesta* (especially in tropical Africa), and *P. Chaudoyei*. In India *M. listoni. M. culicifacies, N. maculipalpis* (?). In North America *A. maculipennis*. In West Indies *Cc. albipes*, that is, a dozen species only of which we can say with any certainty they convey malaria, out of nearly a hundred existing species. But it may be urged if one species conveys malaria another will; that is not a scientific argument, and nothing short of actual proof

should be allowed to satisfy us. One can go further, and say that the profession has a certain amount of evidence, gradually increasing, to show that all species do not convey malaria. He recalled the results obtained by Christophers and himself in India. They formed the hypothesis, based upon general observations, that all species of anophelines were not concerned in the transmission of malaria. They put this hypothesis to the test in two very malarial places in India—Mian Mir (Punjab) and Ennur (Madras). They caught in the same huts, at the same time, in these two far distant places two species of anophelines—*M. rossii* and *M. culicifacies*. They determined by actual dissection which of these species contained parasites (sporozoits), and found as follows:

In Mian Mir.

—	Number Dissected.	Number Infected.	Percentage.
M. culicifacies . .	259	12	4.6
M. rossii	496	0	0
In Ennur.			
M. culicifacies . .	69	6	8.6
M. rossii	364	0	0

So that *M. rossii* was not carrying malaria under conditions where *M. culicifacies* was. These observations have been repeated by others and the result is always the same. *M. rossii* does not in nature convey malaria. This, while scientifically of great interest, is also of practical value. Shall money and time be spent in eradicating *M. rossii* when as far as one knows it is not concerned in the transmission of malaria? These mosquitoes exist in myriads in Calcutta, Madras, Bombay, and in large towns, and are believed to be harmless.

Whether *A. punctipennis* conveys malaria in nature remains to be seen. Similar results (unpublished) have been obtained in Japan. These results, then, show that certain species of anophelines do not convey malaria, and on general grounds there is little evidence to connect those species which we know as "wild" mosquitoes with the transmission of malaria. Anyhow, it should not suffice to state simply "the *Anopheles* was found" without stating what species of anopheline; but, most important of all, it should be determined by actual dissection whether or no that species does transmit malaria. The practical bearing of these facts is obvious. If we can positively state that a certain species of anopheline does not transmit malaria, it will obviously simplify operations directed against mosquitoes. Another point of great interest in connection with anophelines is their breeding grounds. Take again the two Indian species mentioned above, *M. rossii* and *M. culicifacies*. Christophers and Stephens showed in India that, broadly speaking, each anopheline has a breeding ground of its own. At any rate, in the case of the above two species they are totally distinct and different in nature, and whereas *M. rossii* breeds in the shallow pool or puddle some inches deep only, *M. culicifacies* does nothing of the kind. It is never found breeding in these dirty puddles; it loves clear, fresh water, of streams, rivers, canals, and other moving water, where it occurs in myriads. Now if these results are true, that *M. rossii* does not carry malaria, and no doubt has yet been thrown on them, it means that it is unnecessary to attack the breeding grounds of *M. rossii*. This means an immense saving in labor and expense, for even during the dry season the pools in which *M. rossii* breeds are very numerous, and during the rains they are legion. Minute work, then, is still required on breeding grounds on the habits of larvæ, their enemies, fish, beetle, beetle larvæ, and the like, natural larvicides so to speak, all these points may be of great practical import.

The Flight of Mosquitoes.—Then, again, there is a question of flight of mosquitoes, a very important problem. Christophers and Stephens were constantly engaged in trying to make observations on this point, because we used to read alarming statements published by hasty writers that mosquitoes (genus and species it is needless to say not mentioned) flew fifteen miles, so that it seemed to us, if it were so, whatever might be done to free a place from anophelines there was nothing to prevent some of these long fliers coming, with parasites in them, into a district just made free and undoing all one's labors. But close observations convinced them that nothing of the kind happened, or perhaps, to be strictly accurate, did not happen under the conditions they knew of, and all their observations repeatedly made and checked, tended to show that the normal flight of anophelines was a matter of some hundred yards and not miles. Thus they observed that the center of Freetown, the capital of Sierra Leone, was completely free from anophelines. They slept during many months there at all seasons of the year in four different houses and never saw anophlines in their rooms—*Stegomyia,* of course in hordes. But a quarter to half-a-mile away it was very different; there anophelines were as thick as bees. What was the difference? The center of Freetown was in fact a town with large stone houses, open streets, and moderately well-arranged surface drains. But in the outskirts one comes to the streams, with their countless larvæ, in the back-waters and pools, and to the native huts, infested with anophelines, having therein a plentiful supply of blood. Why, then, should they fly abroad and visit the center of the town? In fact they did not, and the result is this important condition, that in the center of Freetown a quarter to half a mile from deadly centers of infection one has a segregated protected area, where the danger of contracting malaria is extremely remote. Again, by a series of observations they made in India they were able indirectly to come to somewhat similar conclusions. They sought to determine why, of a series of villages in the same district, one was highly malarious, another only slightly so, and they found that this was almost entirely dependent on the number of anophelines there present, and that the number of anophelines was dependent on another factor—the presence or absence of breeding grounds past or present; so that when a village was distant three-quarters of a mile from breeding grounds the amount of malaria—the endemic index as we termed it—was reduced to very low dimensions—5 per cent. or 0 per cent., instead of 50 to 70 per cent. where breeding grounds surrounded the native huts. They concluded from these observations that a distance of about a mile from breeding grounds was sufficient to protect that village from malaria, consequently that here at all events this distance was beyond the normal flight of anophelines. The distance in Freetown was decidedly less than this, a quarter to half a mile. These observations seemed to them of some importance as indicating the distance that sufficed to give protection from mosquitoes, or at least a considerable if not an absolute degree of protection. This question of flight of course requires still further study, since, as we shall see later, under certain conditions it may be a complicated one, resulting in distances as great as one to two miles being traversed. One sees, then, that various

problems still exist for a more complete solution than they were able to give in the time at our disposal, and that these problems have considerable bearing on the question of prophylaxis, and that the prophylaxis of malaria will not be best achieved by blindly proceeding to act against mosquitoes as a whole, but by careful action based upon accurate study of all the habits of mosquitoes. Dr. Stephens unduly prolonged these preliminary considerations, but their importance is in his opinion immense, and they are at present practically completely neglected.

Prophylaxis.—In the remaining portion of his paper he considered very briefly modes of prophylaxis, pointing out what in his opinion are the merits or demerits of each system. For in fact it would appear from the advocates of these systems that one and only one method exists—that is, the one advocated by the particular person. Thus it seems to be the aim of the advocates of each system to decry that of others. This does not appear to be the best solution of the problem, for that method that may succeed in one place may quite conceivably fail in another where the conditions are entirely different.

The measures usually adopted are:

1. *Antilarval.*—Of this method it appears to be fundamental and thorough, provided it takes the form of systematic drainage, and that it is the method which should as a sanitary reform be followed as a steady continuous policy. Its merits consist in the obvious fact that as the mosquito breeds in water, if this water can be drained away, the number of larvæ in that area must diminish, and probably if there is no influx from without the number of mosquitoes, and probably also of malaria. It seemed to him that this method should take from the first this form—namely, drainage—and that it is not wise to substitute for it petrolage except as a temporary makeshift, without any attempt to diminish the real source of the mosquitoes—namely, the water.

2. Mechanical prophylaxis by wire netting, etc. That by this means excellent results can be got those of the Italians show. The Japanese have likewise applied it to their troops, with the remarkable result that in a particular regiment the entries diminished from 2,000 odd in 1900 to 256 in the first six months of 1903. We are told that the sentries wore veils and gloves at night!

3. With regard to quinine. He believes this method, too, excellent, and the success attending it remarkable. How far applicable in every locality local conditions must decide. He believes its applicability is somewhat limited, but this should not hinder its adoption in suitable circumstances. In many isolated villages he believes malaria could readily be stamped out in this way, where antilarval measures would be impossible owing to the fact that the larvæ breed in the rice swamps surrounding the villages. A quinine prophylaxis among Europeans in small settlements has given in the hands of the Germans excellent results. The so-called gram prophylaxis, repeated on two consecutive days, has in certain instances been thoroughly effective, and it should be noted that there is no danger of the quinine producing blackwater fever, for, on the contrary, it is among those insufficiently protected with small doses—that is, among those suffering from malaria—that quinine induces blackwater fever.

4. Next, he called attention to a mode of prophylaxis—namely, "segregation of Europeans." It was, however, recommended by Ross as "one of the fundamental principles which the State must adopt in order to extirpate malaria in tropical cities." Major Ross has informed him personally, however, that this was done on general sanitary ground, only, and not on the special grounds resulting from the demonstration by Christophers and myself that the natives were the source of European infection in the tropics. He thinks, then, that they may claim in their report to the Royal Society of May, 1900, to have first put forward this as a definite prophylactic measure based upon our knowledge of how Europeans are infected. Manson has also declared segregation to be the first law of hygiene for the Europeans in the tropics. Dr. Stephens is led to advocate this measure with all the scriousness and urgency he could, because he had seen for himself during two years' traveling in British possessions in Africa the terrible effects resulting from its neglect. That it was a practical policy he had no doubt. He had, in fact, seen it carried out—on general grounds—in Accra, where most of the officials enjoy the protection of well isolated bungalows well separated from the unsanitary native huts; unsanitary in a very special sense, for it is here that anophelines are infected. He had seen that the segregation of Government House, Freetown, a quarter of a mile from native huts, afforded complete protection. It is a policy that can be carried out in the case of single bungalows, situated in the bush, in larger settlements, and even eventually in towns. And yet an African Governor has denounced it as academical (although actually in existence in Accra), impolitic, and so forth. That it is not so is shown by the fact that another African and unprejudiced Governor, who had no system of his own, has actually carried out this prophylactic method, and, personally, he rejoices to learn that in several Gold Coast stations the Europeans now enjoy segregated cantonments. The principle, in fact, in its widest application is that we see over the whole of India, namely, European cantonment and native bazaar. In its more limited and still easier application it means that the European bungalows should not be built as now, in the midst of a native village, surrounded by huts, swarming with infected anophelines, but that an isolated site some half-mile away should be chosen. He believes the immunity then given to Europeans living hitherto in the midst of infected anophelines will be very great. It was an urgent matter and one easily carried out, and one that would at once save many lives, while measures for draining large towns would be a matter of many years. But it is also said that it is not a just method, for the native is neglected, the native must be treated as the white man. Within limits this is true, but it is the limits that alter the nature of the case. When the sanitary and general education of the native population has made any progress whatever, it will then, perhaps, be possible to begin to treat natives and Europeans alike; but until that happy day arrives it is not right to sacrifice European lives that are daily sacrificed to such false sentimental ideas.

The Success of Mosquito Destruction Operations.—Captain S. P. James, I.M.S.; and Lieutenant S. R. Christopher, I.M.S., read this paper. They said so many operations where mosquito destruction has been successfully carried out are reported that it appears almost unnecessary to ask how far such measures may be considered of practical utility in diminishing the incidence of malaria. It is, indeed, only when one makes a closer study of the reports of operations that one realizes in how many cases little or no proof of success is given, and in how many conclusion of success is based on such inconclusive evidence as the number of admissions to hospital and popular report. As regards the number of breeding places it is necessary to

destroy in order to bring about a successful result, we find curiously optimistic ideas very prevalent, and it is far from unusual to see a reduction in admission rates put down to the most trivial and inadequate operations. In perusing such accounts one finds it very difficult to reconcile these easy and triumphant successes with the extreme difficulty encountered in their own efforts. The operations undertaken by the Government of India at Mian Mir were throughout very thorough. Every effort was made to make the destruction of breeding places complete, and experiments were continued for over two years. Many hundreds of pools were drained or filled, and throughout the whole area systematic search for and destruction of breeding places was consistently carried out. Here, then, if mosquito destruction is so readily brought about as would seem from so many accounts, one should have been able to show a very marked and decided reduction in the number of adult *Anopheles* and malaria. As a matter of fact the result in both cases was poor and totally out of proportion to the means employed. If adults were reduced in number it was demonstrable only in the first four or five weeks of the rains with the onset of which the fever season begins. Later on in the season it only required the care always necessary for the detection of *Anopheles* to make it very obvious that marvelously little reduction in their numbers had taken place. The effect upon malaria consited in the delay of the onset of the fever season from the end of August to the end of September. In October the most strenuous and apparently complete measures against breeding places seemed not to influence malaria either in the bazaars or among the troops.

To what are they to ascribe the absence of the usual successful issue? They do not feel justified in considering it due to want of thoroughness in the conduct of the operations nor to peculiar conditions in Mian Mir. There is little doubt that the difference is entirely due to the great disparity in the value of the tests used in estimating the reality of results achieved. In very few instances has an attempt been made to verify a reduction in the number of adult *Anopheles;* nor has a reduction in endemic malaria, as shown by the number of infected natives, ever been demonstrated. The endemic index of Freetown approaches 100 per cent. If measures really possess the success claimed for them it should not be difficult to reduce this to 50 per cent. or less. Short of a reduction in this percentage infection they cannot claim a success in the reduction of malaria. In their reports on the experiment at Mian Mir they attempted to give some idea of the determinable effect of the operations, and succeeded in actually demonstrating such effect, though it was but partial.

Their attempts to really show what has been the effect of operations have a distinct value. They show that destruction of *Anopheles* sufficiently complete to be of practical importance as a prophylactic measure in an undertaking much in excess of the usual estimate of the character of operations necessary. Perhaps the most valuable result of the Mian Mir operations was that they gave an insight into the difficulties which are almost certainly to be encounterd in most really malarious places. They found *Anopheles* breeding places much more numerous than would be gathered from most accounts of operations, and the difficulty of keeping up with the everchanging situation of breeding places under different degrees of rainfall was very great. They found that they had to deal with breeding places under different degrees of rainfall was very destruction was utterly futile. They encountered enormous changes in the facilities for breeding places in the rains, and had to count upon, what appears to have been the main factor causing our want of success, an infiltration of adults from outside the area which could not be prevented by any means in their power. In chronicling their want of ready success we fully realize the inadvisability of damping enterprise by the suggestion of possible failure. But if in the near future they are really to reduce malaria in the tropical possessions, something more must be done than merely to popularize the idea of anti-malarial measures. That malaria will be reduced and in a manner much more direct than by blind schemes of drainage, there is no reason to doubt. Little good, however, seems likely to result from proclaiming a successful issue, the evidence for which will not bear criticism.

Before concluding they called attention to certain points which seem to us of importance. (1) It is easy enough to destroy larvæ in millions and to do away with hundreds of breeding places. It by no means follows that malaria is diminished or adult *Anopheles* banished, and the success of operations on a large scale is still very doubtful. (2) The idea that by destroying breeding places around a barracks, prison, or other building, a reduction in malaria is likely to result requires more critical work before it can be accepted. (3) The occasionally-reported results where a brigade has rid a town of malaria they have no hesitation in challenging as absurd. They are by no means so certain that the number of *Culex* and *Stegomyia* may not be very considerably affected by such means. (4) The use of "admission returns" of all kinds as evidence is a miserable method of proof, and the insignificant factors which greatly influence all such figures make them quite valueless for the purpose of estimating the effect of operations. The only really satisfactory test of success is a reduction of the endemic percentage of infection. In this connection they recommend isolated bazaars and villages as more suitable in the present state of our knowledge for trial experiments than large tropical towns. (5) In any attempt to show a reduction in the number of *Anopheles* it is necessary to recognize that it is easy to delude oneself with their apparent absence, since they are always difficult of detection, and, except in certain places and in certain times of the year, would, as a rule, be considered absent by an observer imperfectly acquainted with their habits. (6) Mosquito operations reports are often extremely uncritical and often ridiculous, since they claim an amount of success for which they have no evidence.

(To be Continued.)

BOOKS RECEIVED.

Transactions of the American Roentgen Ray Society. Fourth Annual Meeting. 8vo, 259 pages. Illustrated.

The Human Sternum. By Dr. Andrew Melville Paterson. 8vo, 89 pages. Illustrated. University Press. Liverpool.

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State Board of Health of Massachusetts. Thirty-third Annual Report. 8vo, 615 pages. Wright & Potter Printing Co., Boston.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves. 12mo, 486 pages. Illustrated. W. T. Keener & Co., Chicago.

Text-book of Alkaloidal Therapeutics. By Drs. W. F. Waugh and W. C. Abbott. 12mo, 405 pages. Clinic Publishing Co., Chicago.

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ORIGINAL ARTICLES.

THE SURGICAL PHYSIOLOGY OF THE LYMPHATIC SYSTEM.

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A STUDY of the lymphatic system readily explains many physiological as well as pathological processes. The great part played by the absorbents in maintaining the nutrition, repair and defense of the system has apparently received but little attention as compared with its importance. That the greater part of the absorption of the body, excepting the intestinal, is accomplished by the lymphatics, is well understood; but their direct relation to surgery seems to have been but occasionally appreciated.

The lymph system, consisting of vessels, channels, spaces and glands, accompanies the arterial system, but varies greatly in extent and character, according to location. These vessels drain certain definite areas, and when diseased by infection, it is usually possible to locate the point of its entrance. The lymphatic is a closed system, having capillaries ending in connective tissue spaces, and the vessel walls, while resembling veins, are exceedingly thin. When we consider that all the tissues of the body are more or less bathed with lymph, a fluid derived from and almost similar to the blood plasma, we would expect to find, as is the case, that tissues will be supplied with lymph and absorbents in direct proportion to their exposure and necessity for repair, as well as to their activity.

Interspersed in the course of the lymph vessels are found groups of glands. These organs vary from the size of a pin head to that of a large bean, and serve from their structure to act as filters to all the fluid passed through them. The glands are filled with nests of the forming leucocytes, and all the lymph is exposed to the probable purifying action of these cells. Here it is that the great bulk of bacteria is checked in infection, and through the action of the leucocytes or some unknown physiological chemistry only the toxins and a limited number of bacteria are permitted to pass to the venous system. It is here that the cancer cell is checked and later overpowers the gland and develops in its outer layers; so one gland after another takes up the work of protection by preventing the waste cells, the products of metabolism, of nutrition, repair or infection, from entering the blood unchanged. Leucocytosis then, to a great extent, will depend largely upon the region involved in inflammation as well as the intervening gland and lymph area between it and the circulation.

An enlarged gland is then an evidence of a local struggle or of a defeat, and it is this type of gland tumor usually considered in surgery. The great number of battles won are an unknown condition; therefore, there is the less appreciation of their work. Manfrid, in an examination of 88 animals and three men who had died of non-infectious diseases, found infected glands in 78 of the animals and all of the men. The glands grouped in the neck in large numbers, as about the mouth, nose and trachea are so many possible points for the invasion of bacteria. Other glandular aggregations are placed on the flexar and vessel side of the union of the extremities with the body, while the interior of the thorax and abdomen is freely supplied with such organs of chemistry and defense. It is claimed that the glands are capable (after removal) of reformation by development at the union of new lymphatic vessels, as the cells found and the reticulated structure and capsule are all capable of regeneration in these glandular regions. For this reason we must, if possible, destroy the original focus when glands are removed for infection.

In certain cases where the glands and lymphatic area are so thoroughly removed that the return of the lymph to the circulation is nearly abolished, a peculiar condition of lymph edema of the limb develops and remains until the equilibrium of the circulation is re-established. This is noticed not infrequently in cases of complete operation for cancer of the breast, where the arm may remain in such a condition for a considerable period. For a long time it was thought that there were but two lymph ducts of entrance into the circulation. The right lymphatic duct opening into the right subclavian vein receives absorbents from the upper right half of the chest and thorax, also the right upper extremity and side of the neck and head. The left or thoracic duct empties into the commencement of the left innominate vein and drains, or has been supposed to drain, all the rest of the body. Leaf has recently found that there may be a communication between the lymphatics and small veins in the groin, and it is possible that others exist and will eventually be located. The nutrition of the body is maintained by absorption of water and digested food, nearly all of which is taken directly into the circulation of the intestine, after passing the epithelial cell. By some wonderful chemistry this cell transforms this material into a suitable condition for association with the blood. The fats are unable to pass the barrier and with the products of metabolism, in maintaining the chemistry of the absorbing cells, enters the circulation by the way of the chyle ducts.

It is now generally considered that the ductless

glands are drained by the lymphatics. When we think of the great importance and the intense and sudden effects of the secretion of these glands when given to the system, we can see the benefits of an intricate duct system, while the failure to drain certain alveoli may partially explain the development of peculiar types of retention cysts, as in colloid cystic goiter. The hard dry gland often found in exophthalmic goiter and the extreme symptoms of Graves's disease, many of which may be produced by thyroid feeding, may possibly be in part from excess of drainage.

The lymph fluid being of nearly the same density as the blood, there can not be expected to be any great osmotic action into the circulation, although the ready absorption of solutions injected into the tissues is explained by direct endosmosis as well as by lymphatic absorption. The quantity of lymph depends upon the pressure in the capillaries and the permeability of its walls, while its circulation depends upon muscular action, the respiration and the heart.

The causes of inflammation are from thermal, mechanical or toxic irritation, the last including the chemical changes caused by bacteria. Some authors would limit the term inflammation to the infected cases only, calling the changes incident to other forms of irritation reparative processes. From one or more of these agents acting through the local nerve supply, there occurs a dilatation of the local arteries, veins and capillaries, followed by an increased rapidity of the circulation which soon slows, and the white cells adhere to the endothelial layer and pass between these cells to become the leucocytes in the surrounding tissue. More severe irritation, and the plasma exudes, still more severe, and there is a free escape of blood cells and fibrin, and the exudate is now capable of coagulation.

Exudates are known from their quality as serous, fibrinous, croupous, diphtheritic, hemorrhagic or suppurative. Serous exudates follow irritation, and also occur in passive congestion and venous stasis. As represented by forms of eczema, anasarca of advanced cardiac or renal disease and the ascites of obstructed portal circulation. The exuded fluids may become inoculated with bacteria in open wounds, or bacteria may make an exudate from the irritating power of the toxins, and the peptonizing power of the bacteria. This fluid is known as pus, and consists of the plasma with white corpuscles and the fixed tissue cells converted into pus cells, with the bacteria peculiar to the infection. In fresh wounds, there is an escape of a bloody, serous, albuminous fluid from the divided tissues, lymph spaces and capillaries. This fluid distends the tissues and separates the injured surfaces, preventing or delaying healing, and being highly albuminous, is subject to infection and decomposition. It is to relieve the tissues of these fluids that external drainage is established. The result of considering drainage as being the delivery in all cases of exudates to the surface is the probable explanation of why each operator has developed a system from his own experience with reference to this subject.

The changes found in special organs are most marked. The brain, in which we would not expect much cell change or repair, is filled with lymph spaces; but is very deficient in lymphatics, the subarchnoid space serving as the absorbing area on its surface. In its substance we will often have a hemorrhagic exudate remain as a local collection, then, by means of secondary changes of the blood cells and a deposit of fibrin and albumin, there is developed a surrounding wall and the exudate is now a cyst, the change sometimes requiring but a few weeks, sometimes months. Injuries of the skull and brain develop cystoid scars as a result of adhesion of the membranes and shutting off of the arachnoid space, while inflammatory diseases, unless involving the surface, may cause no change in temperature and, like cysts, will be located principally by pressure symptoms. It is well known that abscesses may remain for long periods in the substance of the brain without marked symptoms.

The liver and kidney are peculiar gland structures in which the excretory ducts can to a certain extent supply the place of lymphatics in ridding the organ of the products of metabolism. In these organs there is a deficient lymph circulation in their structure, yet a free one upon their surface, and at the region of blood supply. The symptoms of inflammation will be somewhat like those in the brain, yet less marked. Inflammation near the surface causes marked disturbances, especially should perforation of the capsule occur, and a greater field for absorption be invaded. The skin is filled with lymph vessels, constant repair and protection being necessary.

The lungs are rich in lymphatics, and infections or toxins are early and constantly delivered into the circulation with the resulting reaction of fever. The onset of infections in regions rich in absorbents, as the lung, neck, axilla or groin, is often marked by a chill to be followed by continued temperature during the infection until reaction develops protective granulation. Repeated chills occur in regions in which accumulated products of infection is delivered at intervals into the venous circulation without the intervention of the lymph system, as in sinuses of the brain, liver, bone, marrow, uterus or prostate, and occur in streptococcus poisoning where the edema and induration may cause veins to open as sinuses, or when local foci of infection occur in the circulatory system itself.

The peritoneum is but little less in area than that of the entire skin covering of the body. Its lymphatic system is most active in the upper portion of the abdomen. The lymph vessels of the peritoneum over the small intestine are numerous, while there are a few in that portion covering the large intestine, which is capable of but little absorption, as is the parietal or pelvic layer. The peritoneum covering the colon is exudative, and over the small intestine absorptive, not considering the lacteals of the mucous membrane.

The fundus of all organs is deficient in lymphatics, hence acute obstruction gives cyst formation, and chronic inflammation causes shrinking and thickening of the organ. Against infection the body has a certain degree of resistance in the blood. Fresh blood is germicidal to some extent, and later is also a culture medium from the contained albumin. It is increasingly germicidal at a temperature from 100° to as high as 104° F., rapidly losing it thereafter with increasing heat. The plasma free from albumin is more strongly germicidal than the blood. There is a continuous absorption of all exudates in regions supplied with lymphatics and in infectious diseases due to a carrying to the circulation of toxins and at times bacteria, and as a result of increased tissue metabolism, there is a rise of temperature. From repeated infections, the system may become nearly or quite immune to reactionary disturbances, and local infections long retained lose their virulence through a type of continuous inoculation by absorption in minute dose, and through the death or loss of virulence of the bacteria.

If this view of the action of the lymphatic system is correct in outline, it affords additional light upon some obscure pathological conditions. Certain organs are subject to cysts and the same ones, also, to sclerosis; we find that they are the organs with a deficient absorbent system. In theory then, a chronic excess of diffusion would be followed by connective tissue due to the chronic irritation. This would be most marked in the proximity of the vessel. Acute hemorrhage may not be absorbed and by natural changes produce cysts.

Considered in this relation to malignant disease, the condition of the lymphatic system is of the utmost importance. In fact, practically all the advancement in the modern surgery of cancer has been through a study of the areas of lymph distribution involved in any malignant focus. We now have definite gland fascia areas, which must be removed with or at the time of the removal of the original malignant growth. This is true of internal as well as external deposits. It is usually said of cancer that early operation gives a good prospect of cure.

This may be modified by the conditions or age or lymph circulation in the area involved. Thus, cancer in the young is rapidly fatal and early recurrence of metastasis frequently follows operation, the gland distribution being early involved. As compared with the young, old age with its disappearing lymph system and late operation, rather than early time alone considered, may often be more favorable for permanent recovery.

Cancer statistics as to cure improve with each decade of life, other conditions being equal.

Varieties of Drain and Drainage Adjuncts.—First is rest by splints, pressure dressing or bed, to quiet the circulation. Second, by elevation to reduce arterial supply and favor venous and lymphatic return. Third, by massage to break up coagulated exudates and enable the lymph vessels to remove the exuded material. A good masseur, for instance, will relieve the ecchymosis and swelling of a black eye in a remarkably short time by massage and rest. Fourth, moist dressings favor escape of the exudate from open wounds and also favors the lymphatic circulation in closed injuries. Fifth, adjuncts to drainage in the use of solutions having affinity for moisture acting by osmosis as glycerin or alcohol. Sixth, wound drainage is accomplished by the open method with or without secondary suture. Seventh, by separate incision. Eighth, by wicks, capillary or tubular drains or gauze packs as mechanical aids.

Capillary drains are of catgut, hair or silkworm gut in bundles, and serve to drain serum of small amounts in small or large wounds where prolonged aseptic drainage is required, as after gland removal. Capillary drainage is not sufficiently free for the drainage of pus. Tubular drains deliver freely all wound secretions and in aseptic cases, should serve their purpose in from twenty-four to forty-eight hours. When of rubber they should be split from end to end instead of perforated, as it is more flexible with less danger from pressure, drains at all its length, and is easily removed. By means of a thread attached to the tube it may be taken out without removal of the dressing. In septic cases, the tubular drain should be left until the wound is lined with granulation tissue and is without pockets or accessory cavities, as granulation tissue is the natural protection of the system against absorption, as well as being a reparative process.

To freely drain the general peritoneum, nothing seems better than glass, as lymph adhesions form slowly about its surface, and a large area is thus brought under its influence. Gauze is peculiar in its action, at first being a capillary drain; later its meshes become choked with fibrin and it no longer has capillarity, therefore it should not tightly fill the opening from which it emerges. It is a great developer of granulation, as it strains out the blood cells and fibrin from the serum, thus holding in apposition to the cut tissues elements necessary to the development of granulation. Tube drains carry away the same material and granulation will be slower. It is this peculiar action of gauze which makes it necessary to leave it without disturbance for at least four to six days. Previous meddling will tear open the young granulations, give fresh injury, open lymph spaces, and in clean or septic cases it is usually a cause of rise of temperature. Gauze is used in draining acute injury of the brain and in the quarantining of acute infections of the peritoneum. Aseptic operations are frequently followed by a from one to three degrees rise in temperature within from thirty-four to thirty-six hours, which is caused by absorption of blood and is a ferment fever. Temporary fever later than this may be from the intestines, but if this temperature continues, the wound should be examined.

We may say, then, that aseptic operations in regions rich in lymphatics, where the lymph circulation is but little disturbed, will not require drainage—as ligation of vessels in the neck, Alexander's operation, and hernias in the inguinal region. We may also say that aseptic operations in these regions in which the lymph system is removed require capillary drainage from four to six days, as auto-drainage is temporarily abolished and early removal results in serous accumulations without increase of temperature usually discovered when the cases should be dismissed from care; as in removal of cervical glands, cancer of the breast and auxiliary glands, and malignant disease of testicle and inguinal glands. Free drainage of the stump should be employed in amputation for malignant disease where the glands are removed from axillary or inguinal regions.

In regions rich in lymphatics, where operations, for septic conditions, must be made, we open fresh area for absorption of toxins and our endeavor should be to use upon the incised surface strong antiseptics, such as carbolic acid followed by alcohol, chloride or lime as a caustic, or in mild cases glycerin, to prevent or inhibit the action of absorbents, and maintain the disease as a local infection. This is markedly shown in operations for the removal of bone necrosis. For the same reason the cautery is used to incise abscesses in certain regions, and also to make puncture drains in cellular streptococcus poisoning.

Iridectomy and scleropuncture in glaucoma substitute one set of lymphatics for another. In operations for the relief of increasing spina bifida, we employ a suture of two strands of silkworm gut, or catgut can be passed through the stump of the scar to temporarily deliver the spinal fluid into the tissues of the back. Experimental work is now being conducted with a view of permanently draining forms of hydrocephalus into the rich lymph system of the cervical region. In the drainage of wounds, it is a good rule to make a separate incision at the most favorable point and close the original operative wound completely. This plan will improve the scar, and in large abdominal incisions will very often avoid hernia.

In aseptic operations of the abdomen involving considerable bruising or denuding of the peritoneum, the pelvis should be elevated by raising the foot of the bed, the gravity acting as an aid to auto-drainage, the peritoneum being capable of absorbing from three to eight per cent. of the body-weight in an hour.

In septic diseases, just the opposite condition is desired to secure drainage and maintain the condition as a local one, by elevating the head of the bed and also elevating the upper extremity of the patient to gravitate to the pelvis, where delivery may be made through glass tubes. This method is used in diffuse peritonitis. The diseased or septic focus should also be quarantined by a gauze pack through a separate incision, should the condition of the patient warrant the increased operative interference.

A CONTRIBUTION TO THE STUDY OF INFECTIONS OF THE PROSTATE FROM THE URETHRA.[1]

BY FREDERIC BIERHOFF, M.D.,
OF NEW YORK.

While it may be confidently stated that since the more general adoption of the antiseptic plan of treatment of gonorrhea, the percentage of those cases in which an extension of the infection to the posterior urethra and prostate occurs has been greatly diminished, still this extension of the infection does occur, in a fairly large percentage of the cases of gonorrheal urethritis, in spite of the most careful treatment along the most modern and approved lines.

I exclude, of course, those cases in which instrumentation has been employed, such as the passage of sounds, catheters, etc., and those in which injections of the purely astringent drugs have formed the treatment. Why this extension of the process (even where the infection runs a mild course) should occur, sometimes even in the earliest days of the gonorrhea, and why, when it does occur, it should, in the greater number of the cases run so mild, or subacute a course, even when the actual invasion of the posterior urethra has been accompanied by acute symptoms, are questions which have occupied my attention for the past few years, and if I present the result of my observations to you to-day, it is in the hope that these findings may serve, perhaps, as a spur to others, to look more deeply into these questions than lies in my power to do.

Of recent years the view of Guyon and his scholars that the compressor urethræ form a barrier against the advances of the gonorrheal process, has been denied by competent observers, such as Diday, Fürbringer, v. Zeissl, Aubert, Eraud and others. Finger believes that the gonococci have a tendency to locate in the glandular adnexa of the urethral mucosa, and there to form their principal foci of infection; that the infection spreads along the mucous membrane, from follicle to follicle, as far as the membrane contains follicles, and comes to a halt when it reaches a part which is poor in them. Thus the process tends to spread until it reaches the pars membranacea, which has no follicles and is poor in glands, and he believes that an external provocation is required to cause the gonococci to extend over the pars membranacea to the pars prostatica, which again contains numerous gland orifices, the glandulæ prostaticæ, about the caput gallinaginis.

I believe Finger's explanation to be correct, since careful endoscopic examinations have shown me that almost all chronic anterior gonorrheas have their seat in the glands and lacunæ, and the tissues immediately surrounding them, and since examinations of cases of posterior urethritis have shown me that, in almost every case, infection of the posterior urethra was equivalent to infection of the prostate.

[1] Read at the Third Annual Meeting of the American Urological Association, Atlantic City, June 9, 1904.

We have, therefore, to look for the causes, or conditions, which, in the absence of external insults (which we all recognize as potent factors in causing an extension of the infection to the posterior urethra), and in the face of careful treatment with the gonococcicide drugs, permit the infection to spread over the pars membranacea to the pars prostatica.

If we examine the urethra in individuals presenting no symptoms referable to the genito-urinary organs, we find, in a fair proportion of the cases, hypersensitiveness and a distinct degree of congestion of the mucous membrane of the entire posterior urethra; upon palpating the prostate, in these cases, we also find moderate enlargement of the gland, with areas of softening. The prostatic secretion is somewhat increased in quantity, and thinner, and more watery than the normal, and shows, under the microscope, fewer of the normal prostatic elements. In other words, it is increased in quantity, but diluted. Furthermore, if we examine patients who, never having had gonorrhea, or, having had it and been cured of it, complain of symptoms referable to the genito-urinary organs—the so-called "sexual neurasthenics"—we usually find an even more decidedly exaggerated sensitiveness and congestion of the posterior urethra, with similar, although more pronounced, evidences of prostatic congestion.

In other words, a large number of males who do not suffer from gonorrheal urethritis present evidences of a mild, chronic congestion of the posterior urethra and prostate, conditions which distinctly favor the extension of any urethral infection to the congested parts. If you will bear in mind the facts that the gonococcal infection spreads, by the rapid reproduction of the germ, *upon the surface* of the mucous membrane (and then between the cylindrical epithelial cells), and that anything which favors the congestion of the membrane fosters the rapid spread of the infection, I believe that the cause of this spread to the posterior urethra and prostate will be explained, at least for a large proportion of the cases. Excesses in venery, the use of alcoholics, sitting for long periods, horseback or bicycle riding, etc., favor the spread of the infection to the prostate by causing a similar congestion of the posterior urethra and prostate gland.

I believe this view was first advanced by me, in an article in the Medical News, of December 28, 1901. Others have since agreed with me. Since then I have continued the examinations then referred to, and have had no cause to change my views; on the contrary, I have only had that belief strengthened.

The exciting causes which have brought about this congestion of the deep urethra and prostate, in the cases which I have examined, have been masturbation (in the younger patients and many of the neurasthenics), protracted indulgence in withdrawal, coitus interruptus, sexual excesses, or perverted indulgences, and long-continued sedentary occupations. The last-mentioned I have frequently found, in dispensary patients, especially machine operators, to be the cause of a slight, mucous discharge, accompanied in patients of a neurotic type, by ill-defined, deep-seated urethral pain, dull, heavy, lumbar dragging, precipitate, or nocturnal emissions, constipation, etc.

I believe that you will agree with me that most cases of gonorrheal prostatic infection run a comparatively mild course, and are of the catarrhal (endoglandular), or the follicular type, and that a large part of the cases of the parenchymatous type can be cured without incision. Certainly, this has been my experience with my cases, both in private and dispensary practice. Why the course of a prostatic gonorrhea should, in the majority of cases, be so mild, when compared to the urethral inflammation, and why, so long as there be no reinfection of the urethra, the prostatic involvement should give so few symptoms, are questions which have long interested me.

If the prostatic ducts were lined with pavement epithelium, I should say that it is the natural resistance of the squamous cells to the invasion of the gonococcus which protects the gland from the encroachment of the germs; but, according to Krause and Langerhans, they are lined with cylindrical epithelium, which, in itself, offers but little resistance to the spread of this infection. So we must look elsewhere for the cause.

This, I believe, is to be found in the naturally alkaline reaction of the prostatic fluid. Although some authors refer to it as being faintly acid, or neutral in reaction, I have found that, in almost all cases, whether in patients presenting no symptoms referable to the gland, or in those with prostatic congestion, or inflammation, the reaction was *alkaline*, and in only isolated instances was it neutral, or very faintly acid, and then not persistently so.

A few years ago I attempted, in a series of cases, to cultivate, upon serum-agar, the gonococcus obtained in the secretion of infected prostates. To my great disgust, I was unable to do so, in a single instance. After careful control of the culture-media, etc., I communicated the facts to my chief, Dr. Frank, who referred the question to Dr. Wassermann, and was told that the gonococcus can only be cultivated with difficulty from the prostatic secretion. Similarly, Finger, Ghon, and Schlagenhaufer report that the gonococcus grows but *poorly* on serum-agar of *high alkalescence*, better upon this culture-medium when a little acid sodium phosphate has been added, and *very well* upon an *acid medium*. And the prostatic secretion is usually of a *decidedly alkaline* reaction.

Unfortunately, I have been unable of late to carry on culture experiments along this line; but I feel that the fact that the gonococci which enter the prostatic ducts are *brought into and kept in constant contact with a secretion of a distinctly*

alkaline reaction, may be the explanation of the generally mild character of gonorrheal prostatic infection, through a temporary inhibition of the power of development of the germs. In other words, I believe that the character of the prostatic secretion forms a natural protection, even if only partial, against the involvement of the gland itself. I advance this view simply as a *theory,* in the hope that further study and experiments may, at some future date, allow me to speak definitely upon the topic.

When gonorrheal infection of the prostate occurs, it does so in one of three forms, viz., the endoglandular, or catarrhal type, the follicular and the parenchymatous.

In the first the gonococci do not penetrate deeply into the subepithelial layers, but lie upon the surface, or between the cells. In the cases of this type which are seen early, there may be little or no change in the urine, and few or no symptoms, unless the onset be acute. The onset is, however, in this, as in the other forms of gonorrheal prostatitis, usually of a subacute, creeping character, and is apt to altogether escape the patient's notice.

The prostate is found, on examination, to be changed in size and consistence, although in the mild superficial type, the changes may be so slight as to be hardly palpable, and to be only a very slight, uniform enlargement and softening. As the degree of severity of the process increases the enlargement is more pronounced; the softening is, however, of the same character as before, and the prostate feels "doughy." The quantity of prostatic secretion is usually abnormally large; its microscopic appearance may be normal, or more watery than usual. Under the microscope it is found to contain fewer of the lecithin granules than the normal, more mucus, few leucocytes (where the process is purely superficial), and gonococci, usually extracellular. Where the germs have penetrated deeper, there is a yellowish tinge to the secretion, with a degree of opacity, the color and opacity varying in depth according to the severity of the process. Microscopically the pus cells are found to be much more numerous, and numbers of them contain gonococci.

Under appropriate treatment, which is usually in cases of this type, not of long duration, the enlargement and softening gradually disappear, the leucocytes diminish in number, as do the gonococci, finally disappearing entirely—the germs usually an appreciable length of time before the pus cells. In the later stages, epithelia appear in the secretion, but also gradually diminish in number and disappear, and the entire character of the secretion gradually becomes normal.

The second variety, the follicular, represents the condition in which the gonococci have penetrated into the subepithelial tissues, and there keep up a mild degree of inflammation. Owing to this perilobular, productive inflammation, the affected lobules gradually become surrounded by a layer or sheath of infiltration, which imparts a sensation harder than the normal prostatic tissues, to the examining finger. In other words, we feel *areas of hardening* in the gland. Where the duct, or outlet of a lobule is involved to such an extent that it is completely occluded, this sensation is most pronounced. The second urine is cloudy, usually distinctly so. It is the follicular type of prostatitis which gives us those chronic cases which give a history of having persisted for months, or even years, and it is at times necessary to examine the secretion several times after massage of the prostate, when the older cases are first seen, before one can discover gonoccoci in the secretion; it is this form, too, which gives us the seeming relapses, when, after the gonococci have been absent for days and the urine clear, there is a sudden reappearance of turbid urine, with pus and gonococci in the prostatic secretion, following massage, or the provocative tests.

I have repeatedly experienced this sudden return in the treatment of cases of this type, and it is due to the rupture and emptying of the contents of a previously occluded, diseased lobule. Continuance of the treatment is followed by a rapid subsidence of the symptoms. In this type of cases also it is frequently necessary to resort to the application of heat to the prostate, through the rectal psychrophore, in order to aid in softening the areas of hardening, and to make it possible to express the diseased secretion.

Both the aforementioned types of prostatitis begin usually without pronounced symptoms to mark the onset of prostatic involvement. The onset may, however, be of an acute character, with pronounced symptoms, such as frequent and painful micturition, followed by tenesmus. Seldom is there any chill, or febrile movement, or feeling of pain and heaviness in the perineum. These latter usually denote the onset of the acute form of the third, or parenchymatous, variety.

In the milder cases of parenchymatous prostatitis it is sometimes difficult to differentiate between this form and the moderately pronounced form of endoglandular prostatitis, especially when the latter occurs in neurotic individuals. But, whereas the enlargement of the prostate, in the latter cases, is of a *doughy,* soft character, in the former it is more uniform and elastic. The sensitiveness is, in the former, also more acute, and distinctly a *pain,* while the patients with the latter type usually speak of the examining fingers causing rather a *disagreeable* than a *painful* sensation. And while the expressed secretion, in the endoglandular variety, seems simply to be exaggerated in amount, and to contain more of the fluid elements, with a varying number of pus cells, that of the parenchymatous variety has a *reddish* tint, and is found to contain *erythrocytes* in large numbers.

In the pronounced form of the trouble, however, there is no difficulty in making the diagnosis. Usually of acute onset, there is a distinct

increase in the frequency of urination, accompanied by a burning pain, and followed by a marked degree of tenesmus. If the enlargement of the gland is at all pronounced, there is difficulty in urination, which, at times, even amounts to retention. There is a dull, dragging pain in the perineum and rectum, with distress and difficulty in defecation, leading at times to obstipation. The pain tends to extend to the glans penis, toward the hypogastrium and into the thighs and makes sitting, or standing, very difficult and painful. Chill and fever may occur, and usually denote active suppuration; but they may be absent, even in the face of a prostatic abscess. On palpation, the prostate, in the severer form of parenchymatous prostatitis, is found to be markedly enlarged (sometimes to three, or four times its natural volume), hard, and exquisitely painful to the touch. When suppuration supervenes, an area of softening develops at some point in the gland. When rupture of the abscess occurs, relief from the pain and sensitiveness is usually marked, and a distinctly depressible area marks the point of greatest tissue-destruction.

The question whether abscess formation in the prostate occurs as a result of pure, gonorrheal infection, or of mixed infection, is still an open one.

The prognosis is good, as a rule, and even the more stubborn cases of the follicular variety are definitely curable, if proper treatment be persisted in. Only in those cases where a prostatic abscess spreads to and involves the pelvic cellular tissue, or those in which the symptoms of systemic involvement are pronounced, does the prognosis become grave.

The treatment of gonorrheal prostatitis consists principally of careful massage of the affected gland, combined with irrigations with solutions of the gonococcicide drugs. In spite of the doubts cast by some upon the efficacy of massage in ridding the prostate completely of its diseased contents, I must maintain that, when *properly carried out*, this procedure makes it possible to gradually expel the infection completely. Naturally, when the infectious matter has been expressed into the urethra, it should at once be rendered innocuous, by means of a flushing of the entire urethra and bladder. Personally, I prefer to irrigate the entire canal both before and after the massage, whether for purposes of examination, or treatment, since I believe that, in this way, the chance of entrance of germs into the seminal ducts is greatly diminished.

In the milder form of endoglandular prostatitis, a few applications of this treatment usually suffice to definitely rid the gland of infection. In the follicular form, the treatment must be persisted in, and usually covers from four to eight weeks. Frequently, in these cases, it becomes necessary to resort to the application of heat to the prostate. This, applied nightly, I have found to be of great service in softening the hardened nodules, and rendering possible the more speedy evacuation of their contents.

Where the onset is acute, rest in bed, and appropriate diet are indicated,—but not a suspension of the irrigations, so long as we work entirely with the gonococcicide drugs. Here the use of heat is also of service (in the form of a hot sitz-bath), and is grateful to the patient. Where pain and tenesmus are marked, opium and belladonna, in the form of rectal suppositories, help to give relief. In the parenchymatous form, these measures are also indicated.

Contrary to the usual usage, I believe that febrile movement is not, *in itself*, a contra-indication to local treatment. I have frequently seen rapid defervescence follow the inauguration of these measures; naturally, they must be applied with the utmost gentleness. But where pain and tenesmus are so great, or are so much increased by the treatment as to weaken the patient, I believe in waiting until the acute stage subsides; after that, *begin local treatment as soon as possible*. And where massage is not well borne, at least the irrigations should be employed to repeatedly disinfect the surface of the mucous membrane and limit, so far as possible, the tendency of the disease to spread.

I am not, however, an advocate of long-continued, or heavy pressure in massage of the prostate. I have too frequently seen brusque, or strong massage followed, in a few hours, by an involvement of the neighboring organs. It should be *very gentle*, for a duration *not exceeding a minute*, and be rather a stroking pressure than a kneading of the gland.

When, in follicular prostatitis, an occluded follicle ruptures, we feel a softened depression at the point where the focus of hardening had previously existed. Gradually the surrounding zone of infiltration disappears, until the prostate again feels normal. Similarly, too, the breaking down of the tissue and formation of an abscess, in parenchymatous prostatitis, is marked by the appearance of an area of softening, in the inflamed gland. The majority of prostatic abscesses tend to discharge by opening into the prostatic urethra, consequently, in the majority of cases, a counter-opening is not necessary, and it is possible to cure them with massage and irrigations also. Where the process breaks through the capsule of the gland, and involves the pelvic connective tissue, the perineal incision should not be delayed.

I have been struck by the frequency with which patients suffering with prostatitis, of whatever type, complain of a variety of nervous symptoms, chief among which are marked mental depression and, in the endoglandular and chronic follicular cases, decided disturbances in the sexual functions. These symptoms give way rapidly upon an improvement in the prostatic condition, and usually disappear entirely upon the restoration of the prostate to the normal.

Frequently there exists, simultaneously, an infection of the glands and lacunae of the anterior urethra with the prostatic infection. In such cases no instrumentation should be employed un-

til *after* the cure of the prostatitis, and then only when combined with flushings of the urethra, as before mentioned, to avoid re-infection of the prostate.

For purposes of closer observation, I have made use only of my own private patients, who could be closely controlled. In all, 62 cases have come under my observation with a gonorrheal or a mixed infection of the prostate. In 54 of these the infection was present when the patients were first seen, while, in the remaining eight it developed during the course of urethritis, for which I was treating them. In two of these eight the neglect of local treatment by the patients themselves, coupled with severe bodily excitation, in all probability, permitted, or caused the infection to spread to the prostate; in one it was the result of similar neglect, coupled with prolonged railway travel; in one as an extension of a periurethral inflammation, which was present when the patient came to me, so that proper treatment could not at once be begun; in two as a result of prolonged sexual excitement; in two for no traceable cause.

Forty-seven cases were of the endoglandular type, eleven of the follicular, four of the parenchymatous, of which two were prostatic abscesses. The eight which developed while under my care, were all of the endoglandular form.

In 57 of the cases there was a pure gonococcus infection of the prostate present, in five a mixed infection. Of these latter, in one case of prostatic abscess, there was a large, plump bacillus present with the gonococcus; in another, a case of parenchymatous prostatitis complicated with cystitis, ureteritis and pyelonephritis, a large staphylococcus was found in addition to the gonococcus. In one endoglandular case a diplobacillus, in another of the same type a large staphylococcus, and in a third, complicated with cystitis, other bacteria, of a kind not noted, were present with the gonococci.

Five cases (four endoglandular, one prostatic abscess) were seen in consultation. Eleven (nine endoglandular, two follicular) withdrew from treatment. The remaining 46 cases were treated until the disease was at an end; of these 34 were of the endoglandular, nine of the follicular, and three of the parenchymatous type, of the last of which one was a prostatic abscess. All of the 46 were discharged cured, and it was possible to control 41 of them later, at different periods, and all were then found to be still free of gonococci, and with normal, aseptic prostatic secretion in spite of their return to their usual habits of life. The controlled comprised 30 of the endoglandular, eight of the follicular, and three of the parenchymatous type.

Complications were present in ten cases, when they entered treatment; epididymitis dextra in two cases, sinistra in three, sinistra complicated with acute funiculitis in one, cystitis in one, ureteritis and pyelonephritis in one, tendovaginitis in one, periurethritis in one.

Complications developed in 13 cases; they were epididymitis dextra in five, this in company with a Cowperitis in one, and epididymitis sinistra in seven. In all but two of these cases the complications were traceable to distinct causes, such as exposure to chilling, severe bodily exertion, railway travel, and sexual excitement. Of the two exceptions, one was a case of prostatic abscess, the other of acute follicular prostatitis, and it is likely that the massage was the exciting cause of the complication.

The duration of the cases from the time that treatment of the prostate was begun until the gonococci were definitely absent and the secretion normal, under the microscope, was, in the cases of the endoglandular type, as follows:

Under one week, in ten cases.
One to two weeks, in eight cases.
Two to three weeks in six cases.
Three to four weeks, in one case.
Four to five weeks, in one case.
Five to six weeks, in one case.
Six to seven weeks, in one case.
Seven to eight weeks, in two cases.
Nine to ten weeks, in two cases.
Twelve to thirteen weeks, in one case.
Fourteen to fifteen weeks, in one case.

In other words, 24 of the 34 cases were cured within three weeks.

In the follicular type the duration was:

Four to five weeks, in one case.
Six to seven weeks, in two cases.
Seven to eight weeks, in two cases.
Eight to nine weeks, in one case.
Nine to ten weeks, in one case.
Eleven to twelve weeks in one case.
Thirteen to fourteen weeks in one case.

The duration, then, of these cases, is longer than that of the endoglandular type.

Of the parenchymatous type, the duration was five to six weeks in one case; nine to ten weeks in another.

The prostatic abscess lasted eleven to twelve weeks before it could be pronounced cured.

THE USE OF ABSORBENT PAPER IN THE SERVICE OF PRACTICAL HEMATOLOGY.

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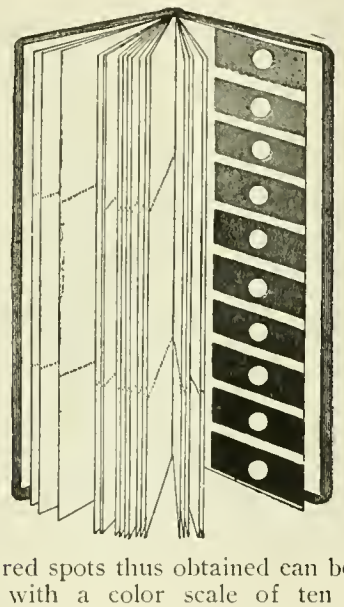
The great strides which research has made during the last decades in the department of hematological science has demonstrated the pre-eminent importance of a knowledge of the state of the blood in judging, not only of the genuine anemic conditions, but also of a number of other pathological circumstances. It has, therefore, become an imperative duty for the practising physician at all consultations on disease not to overlook the condition of the blood.

Here, however, we are confronted by a not inconsiderable difficulty. If every time an anemia or other pathological condition of the blood might be suspected to exist, we should set to

work with all the apparatus required for a minute examination of the blood, the consultation hour would assuredly not give time for many such scrutinies. Besides which, the expense of this apparatus would in many cases stand discouragingly in the way of the individual physician.

The presence or absence of anemia makes itself known above all in the quantity of the hemoglobin, and the first instrument needed is certainly, under such circumstances, a practical and easily applied hemometer.

The "*hemoglobinscale*," constructed by myself some years ago, can, in this respect, scarcely be excelled as regards simplicity in application, and the widespread favor which has already been won by it in different countries speaks well for its having supplied a practical want. As is known, the quality of color in the blood is tested with this instrument by soaking a drop of blood into a piece of white absorbent paper, after



which the red spots thus obtained can be directly compared with a color scale of ten different tints.

The idea of using absorbent paper for estimating the color of the blood, I found first in Ehrlich and Lazarus,[1] and it was a development of this idea that led to the construction of the hemoglobinscale.

Since this simple apparatus has come into the market in book form it has repeatedly been subjected to control examinations. Among others, Hedemies[2] finds that the exactness of the results obtained by the scale do not fall far short of those as determined by the Fleischl hemometer, and are fully equal to those given by the Gowers method. Aspelin[3] in his hematocrit examinations, has likewise found in the main a good correspondence with the Fleischl-Miescher hemometer, after which the scale has been constructed.

It has been demonstrated that the hemoglobin scale, in addition to the practitioner's needs, can also be of service for clinical and other purposes. Cabot says ("Clinical Examination of the Blood") that it "can be used by any one with sufficient accuracy for practical purposes, and with a celerity that makes hemoglobin estimation no more of an undertaking than feeling the pulse," and that "it deserves to supplant all other hemoglobinometers in clinical work" and also "I have used the instrument in several hundred cases, and have never yet been misled by it." Of course this, like all other hemometrical methods, requires a certain amount of practice in order that the results obtained shall be entirely reliable.

The above holds good, however, only on the hypothesis that the colors in the scale which is used are exact, and the difficulties have not been slight in the obtaining of a thoroughly correct reproduction, as not only of the intensity, but also of the shades of change from color to color. There is also added the difficulty that the printed colors undergo a change unless every precaution against the same is used, and it is on this account that I find myself called upon to personally superintend the preparation of the scale.

A piece of white absorbent paper of suitable quality is, therefore, a great asistance to a practitioner in making an anemia diagnosis and for judging its intensity. Ehrlich and Lazarus[4] express themselves on the subject in the following manner: "If this easy, convenient method, which can be used even during a consultation hour, were to be followed more frequently, it would make the popular diagnosis, 'anemia,' lose ground. In the case of neurasthenic patients, who only too often believe themselves to be anemic, and who look anemic, a *demonstratio ad-oculos* is often sufficient to convince them to the contrary."

In addititon to this, the piece of absorbent paper gives us, in different cases, a number of other valuable suggestions. With the publication of my color scale[5] I have drawn attention to a phenomenon which at times may be noticed in anemias in the spot of blood on the absorbent paper. Around the colored spot extends a moist ring, which is especially visible when the paper is turned toward the light. The ring always denotes a great decimation of the number of blood corpuscles, and it has been shown that, as a rule, this condition first appears when the number of blood corpuscles per cubic entity is reduced to about half the normal, or less. The greater the diminution the broader is the moist transparent ring. The presence of the ring is thus an indication that a graver anemia exists. This phenomenon, as a rule, does not appear in chlorosis, even of considerable intensity, in which, in general, the diminution of blood corpuscles does not reach an excessive degree. On the contrary, it is seldom absent in pronounced so-called pernicious anemia. These observations have since been confirmed from other quarters.

Finally there is still another form of disease of the blood which, in a special manner, makes its presence known by the absorbent paper test. I refer to leucemia. If the diagnosis has not already been made the attention cannot fail to be immediately directed to the condition as soon as the attempt is made to drop blood on the paper. In striking contrast to the usual conditions we find that the drop is sucked up by the absorbent paper very slowly, thus an appreciable time elapses before the spot has dried sufficiently to allow the test to be made. With a closer scrutiny it is perceived that the shade does not accord with any of those found in the scale, for which reason also an estimate of the strength of the color cannot be made. The large number of leucocytes, it is true, must be considered to be responsible for the change, in the physical condition of the blood. Only a great augmentation of the amount of white blood corpuscles, such as we find in leucemias, is shown in the above-named manner by the absorbent paper. Possibly the altered condition of the leucocytes themselves plays a part herein.

As a valuable addition to our usual simple physical examination methods the absorbent paper test for the blood is, therefore, under many circumstances not to be despised by the practising physician.

1 Die Anämie-Nothnagel's spec. Path. und Therapie: Bd. VIII, Thl. I, II. I.
2 Upsala Läkareförenings Forhandlingar, Bd. VI, 1901.
3 Zeitschrift für klinische Medizin, Bd. 99 (Festschrift fur Runeberg).
4 Loc. cit.
5 Zeitschrift für klinische Medizin, Bd. 40, H. 1; Archives generales de medicine, 1900; St. Paul Medical Journal, 1900.

THE CLIMATE AND WATERS OF HOT SPRINGS, VIRGINIA.

BY GUY HINSDALE, A.M., M.D.,
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THE Hot Springs of Virginia owe their popularity as a health resort to a remarkable combination of climate, a variety of mineral springs for external and internal use, a complete bathing equipment, and an establishment which provides accommodations of the first rank. Although a large proportion of visitors come for the treatment of various affections, there is much to attract the ordinary tourist.

The climate is distinctly stimulant, as might be expected from an altitude of nearly 2,400 feet in a valley among the mountains of Southwestern Virginia. Compared with New York, Boston, Philadelphia or Chicago, the air is rarer, dryer, purer, and more invigorating. The cold in winter is not so penetrating, and the summer heat never so intense.

Annual Summary.

HOT SPRINGS, BATH CO., VA. Elevation 2,400 feet.

1899.

Annual mean temperature,		51.7° F.
August 4, highest,	91°	
February 10, lowest	14°	
Total precipitation for the year,		40.77 inches
June, greatest monthly precipitation,		7.60 inches
November, least monthly precipitation,		0.61 inches
Total snowfall,		4 inches
Number of rainy days,		65
Number of clear days,		222

1903.

Annual mean temperature,		49.4° F.
August 25, maximum	88°	
February 18, minimum	—6°	
Total precipitation,		47.66 inches
June, greatest monthly precipitation,		7.78 inches
May, least monthly precipitation,		1.25 inches
Total snowfall,		19 inches
Number of rainy days,		112
Number of clear days,		177

October, November and December are the months of least precipitation; June and July are characterized by heavy thunderstorms. The average annual rainfall is 40 inches.

In 1903 the last killing frost was April 27, and the first October 18.

The temperature at Hot Springs during the past winter, which was unusually severe, reached —6° F. The highest recorded was 98° F. There

The Bath House, Virginia Hot Springs.

is a wide diurnal variation, and the summer nights are cool, and the mid-day temperatures in winter are often 30° F. above the minimum at night.

The air is much dryer than at the seaboard. The soil is mixed with clay in the valleys, and the outcropping of the Shenandoah limestone accounts for the calcareous nature of the water. But close to the limestone are formations of trap and shale. The outcroppings of trap are vertical and form the backbone of the ridges so common in this portion of Virginia. The shale affords a purer and more palatable water, and it is this which affords the ordinary water for table use. The geological formation is a glacial drift, and most beautiful erosion effects are seen all through the valley. Great masses of limestone, gravel, and detritus are massed along the hillsides, and some remarkable effects have been produced. Water courses penetrate the soil for miles under-

ground and emerge in bold streams from under the ridges, which rise a thousand feet above them.

One of the striking features of the locality are warm springs and cold springs in very close proximity. These may vary 45° F. within fifteen feet of each other, and evidently, have their origin in widely different sources.

The mineral springs owe their efficiency mainly to the methods employed in their application. The Boiler Spring, which is used for bathing, has a natural temperature, when delivered in the baths of 104° F. It contains total solids of 34 grains per gallon, mainly calcium and magnesium carbonate and magnesium sulphate. Its contained gas, CO_2, amounts to twenty-four inches per gallon. The flow from this spring is about 130,000 gallons daily. This water is conveyed by gravity in protected iron pipes, 200 yards to the bath-house, where it is used for the spout and tub baths. The pressure of the spout bath may be regulated up to a maximum of eighteen pounds to the square inch, and for the tub bath may be moderated with colder water. Cold water for douches can be had in every bath-room. The tubs are constructed so as to afford a strong, buoyant flow of water freely flowing over the sides and drained away. Connected with the twenty-six bath-rooms are rooms with couches for hot packs, for massage, and a solarium for rest afterward.

In addition, there is the latest and most complete hydrotherapeutic apparatus, the Baruch-Richter douche table, with circular, rain and Scotch, jet and perineal douches and hot-air cabinets. Trained masseurs and attendants are employed. The physicians thus have at their command the very best combination of means for the successful treatment of gout, rheumatism, and many nervous diseases, including insomnia, neurasthenia, hysteria, hypochondria and malnutrition.

There are walks of moderate and regular grade, with resting places every tenth of a mile, and mountain paths which are available for graded exercises and the reduction of overfatness. The climate and attractive scenery add much to the value of this resort.

The property of the Hot Springs Company embraces several thousand acres, and its natural beauties have been conserved by most intelligent engineering. The hotel, which accommodates over 600 guests, occupies an elevated knoll near the principal springs. It is a substantial brick building in the colonial style, and was built three years ago on the site of a former structure. Its reputation is of the highest order. While in no strict sense a sanatorium, it provides many of the features which invalids and others desiring medical treatment require. These include a diet menu,

with unlimited milk served in sealed bottles from a dairy where the herd of Alderneys is inspected and tested at proper intervals; an ice plant in connection with the hotel, and a supervision of the springs and general water supply and sanitary arrangement by a competent chemist and hygienic expert, Dr. Henry Froehling, of Richmond. For the convenience of bathers the hotel is connected with the bath-house by an enclosed passage-way.

The waters are applied by attendants in accordance with prescriptions. These indicate the use of the spout, from a fixed nozzle delivering warm water, 104° F., at a pressure of sixteen to eighteen pounds to the square inch; a tub bath at various temperatures from 95° to 104° F. for not over five to ten minutes, followed with a pack in three or four hot blankets, a cold douche and an alcohol rub. The attendants may also rub the patients in the tub. Usually not all these features are employed in the same bath.

Analysis of Healing Spring Water.[1]

	Grains per gallon.
Magnesium carbonate,	3.435
Magnesium sulphate,	6.076
Calcium sulphate,	2.380
Calcium carbonate,	23.065
Sodium sulphate,	1.673
Sodium chloride,	0.143
Potassium sulphate,	2.586
Potassium chloride,	0.183
Lithia carbonate,	0.0356
Ferrous carbonate,	0.193
Alumina,	0.048
Silica,	2.677

The Healing Springs, which are three miles distant, are owned by the Virginia Hot Springs Company, which also controls the Warm Spring, seven miles farther up the valley. The Healing Springs water is the most efficacious and most generally used for internal administration at this resort. It contains 36 grains of total solids per gallon, principally calcium corbonate, magnesium sulphate and carbonate of sodium sulphate. It is considered, by reason of its diuretic properties and its acceptability to the stomach, the best water to eliminate uric acid from the system. Unlike the sulphur water, it keeps well after transportation, and is suitable not only for use during a residence at the spring, but for the "after-treatment" at home. The magnesia, sulphur, and soda springs are also used as individual cases require. The temperatures are 98.2°, 99.4° and 74° F., respectively.

It is a common observation that a decided reaction follows the first three or four baths. This should be anticipated, and is in no sense an indication that the baths do not agree with the patient. This febrile reaction, with swellings of the affected joints, is the first step toward the elimination of morbid products.

It is not claimed that the marvelous results from bathing in these hot springs are due to absorption by the skin of the mineral constituents of the water, but they are attributable rather to a temperature effect. The heat or cold stimulates the peripheral nerves of the skin, and these, in turn, favorably affect the central nervous system.

It is a well-established fact, not, perhaps, generally recognized, that water holding less saline matter in solution is more readily taken up into the blood stream than water containing much saline matter. The denser waters are liable to cause a sense of pressure and fulness of the stomach. The waters used at the Hot Springs of Virginia are of the lighter class, none of them containing over 35 grains of solid contents per gallon. The waters are therefore easily borne. The only objection is that in susceptible persons there may be slight constipation during their use.

Out-of-door sports are a great help in treating patients at the mountain spas. Exercises on the golf links, on horseback, and mountain climbing all have their place in treatment, and, properly used, make life attractive. On the other hand, there is a great tendency at a fashionable resort to indulge in rich foods and to drink wines and strong liquors. These tend to undo the good effects produced by the baths and the climate. Too much stress cannot be placed on the proper regulation of diet and on abstinence from alcoholic drinks in the successful treatment of gout, rheumatism, and most nervous affections. Many visit the Hot Springs of Virginia and similar resorts to restore a proper function to the stomach, the kidneys, or the liver. The use of hot baths and diuretic waters accomplishes much; as a rule, it is easier to break off bad habits at the springs than it is at home, and under new medical authority much can be done for these cases.

1 By Dickore and Morgan, Cincinnati.

THREE CASES OF PROBABLE PSITTACOSIS.

BY HERMAN F. VICKERY, M.D.,
OF BOSTON;
WITH BACTERIOLOGICAL REPORT
BY OSCAR RICHARDSON, M.D.,
OF BOSTON.

In 1879 J. Ritter[1] reported a house epidemic of severe pneumonia which he ascribed to contagion from parrots, or rather the cages in which the birds had been transported. Similar observations were made by Ost[2] in Berne in 1882, and Wagner[3] in Leipzig in 1882 and 1886.

In December, 1891, 500 parrots were purchased in Buenos Ayres for the Paris market. Of these 300 died on the voyage and 200 reached Paris in February, 1892. During that year there were 49 cases of the disease now known as psittacosis, ascribed to infection from these parrots, with 16 deaths. In 1893, seven cases with five deaths; in 1894, two cases, both of which recovered; in 1895-96, 12 cases, with three deaths.

In 1894-95 there were house epidemics in Florence and Ponto of a malignant atypical pneumonia, appearing almost simultaneously in several members of the same family, or even involving the whole family, and in some instances conveyed directly from one individual to another.

This visitation was ascribed to parrots which had been imported by way of Genoa from South America. Observations[4] were made by Banti, Malenchini, and Palamidessi.[5]

In 1897 it was reported[6] that in Genoa 14 persons fell sick and eight died because of two parrots brought from Brazil.

In 1898 in the Julian Venetia three inmates of one house fell sick and of these two died where two parrots had died shortly before. Leichtenstern[4] observed house epidemics in Cologne in 1898. In one there were ten cases and four deaths; in a second eight cases with one death. Leichtenstern regards it as probable, but not susceptible of absolute proof, that both of these cholera, but more like Nocard's bacillus, though apparently not identical with it.

In 1896 Gilbert and Fournier[10] reported five cases of psittacosis in man; of these two died. In the heart's blood of one Nocard's bacillus was found post mortem. It proved to be an extremely virulent organism, killing rabbits, mice and pigeons within fourteen to eighteen hours after inoculation.

Nicolle[11] reported, in 1899, an epidemic affecting eight persons, of whom four died. Although he did not find Nocard's bacillus, he obtained a serum agglutination from a culture of that bacillus in dilutions of 1 to 50 and 1 to 60. The serum also caused a clumping of typhoid bacilli,

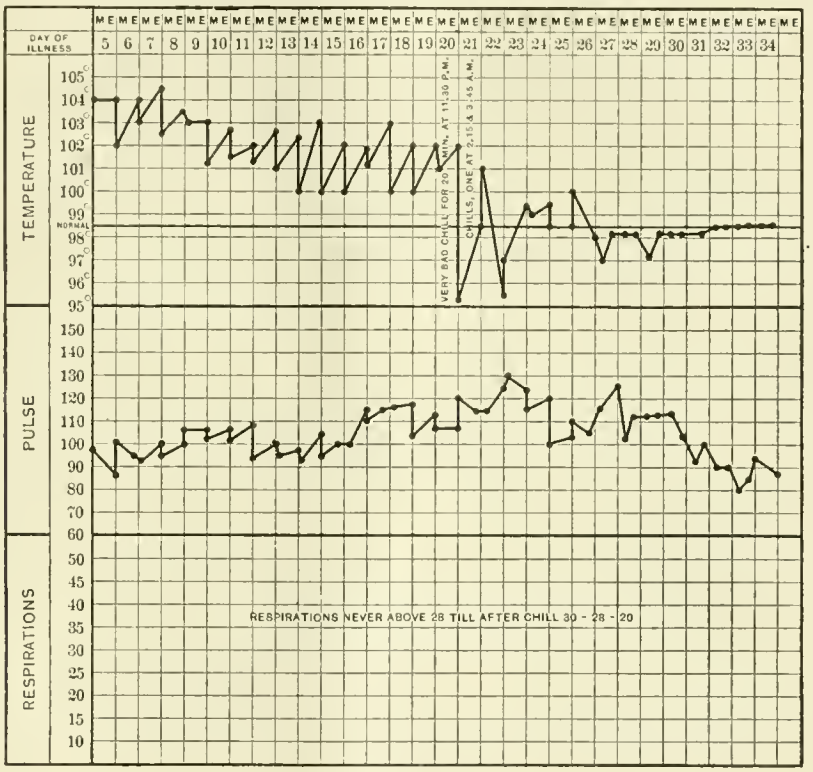

Chart of Mr. M.

groups of cases were referable to contagion from parrots.

In 1880 Eberth[4] reported the discovery of enormous numbers of micrococci in the body of a gray parrot, and in 1883 M. Wolff[8] examined the bodies of 12 gray parrots from the Guinea coast with a view to explaining the immense mortality in parrots brought thence to Germany. He also found micrococci in great numbers.

In 1893 Nocard[9] isolated a specific bacillus belonging to the group of colon bacilli.

Among the Florentine cases Palamidessi (already mentioned), in a house epidemic which attacked five persons in one family a few days after a South American parrot was introduced, found a microbe similar to the bacillus of chicken

although the patient had never suffered from typhoid fever; but Widal[12] and Sicard[4]—1896—claimed that they could differentiate the typhoid bacillus from Nocard's by the serum reaction.

The symptoms of the disease in parrots are: loss of appetite, debility, drooping of the wings, and diarrhea, ending with convulsions and death. In man the symptoms of the Paris epidemic might be summarized as those of a grave typhoidal condition, with atypic pneumonia. The onset is acute, often with chilliness or a true rigor. Exceptionally the disease begins insidiously, but in that case there is apt to be a chill when the pneumonia begins. The temperature is often 103° F. on the first day and perhaps 104° F. on the second day of the illness. The

fever is more or less continuous, with a termination by lysis. In many cases successive foci of pneumonia develop, giving the temperature curve a recurrent type.

With the onset the patient is feeble and depressed; he usually has a violent headache and is often dizzy. There may be delirium. As a rule there is obstinate constipation, but some cases suffer from diarrhea. The spleen is always enlarged; there may be a roseolar eruption or petechiæ. From the beginning of the disease there is a noticeable cough, and on auscultation subcrepitant râles are found throughout both lungs; then after a few days there is a slow development of pneumonia, which may be either lobular or lobar. In some cases, however, there may be no evidence of consolidation.

In the cases reported by Leichtenstern, above referred to, the illness was similar. There was the great weakness and depression from the start and almost invariably a severe headache, but no cases had delirium. As a rule, there were no abdominal symptoms. The spleen was not found to be enlarged in any of the cases, thus contrasting with the Paris epidemic.

The period of incubation varied from one to three weeks in the Paris and Cologne epidemics. Warthin states that it is from seven to twelve days. The mortality is put at 37 per cent. The disease is said to be more severe in the elderly. Treatment is purely sympathetic.

Czaplewski made bacteriological investigations in Leichtenstern's cases. He sums up as follows: First, the parrot which he examined did not die of infection from Nocard's bacillus. Second, no conceivable etiological connection can be proved between the disease of the parrot and the illness of those in whose house it was. He adds that he does not at all wish to deny the possibility of the existence of a genuine infectious disease in parrots communicable to man.

As Warthin states, "the bacteriology of psittacosis and the true relations of the parrot disease to the atypical pneumonia seen in man are yet to be definitely determined."

This outline of our knowledge as to psittacosis may be convenient for comparison with three

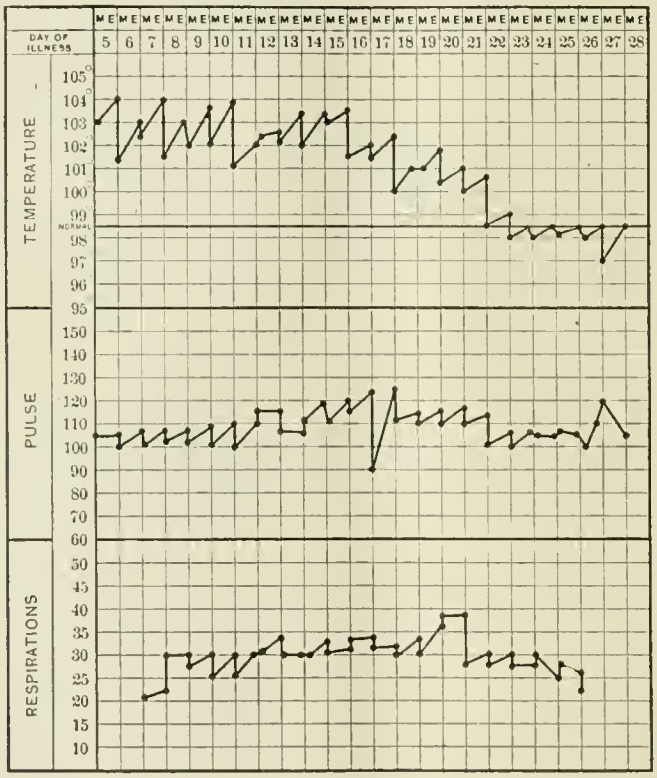

Chart of Mrs. M.

cases of disease which came somewhat under my own observation in Wolfboro, Carroll County, New Hampshire, in December, 1903. They were the patients of Dr. Nathaniel H. Scott, and were seen by me in consultation with him and Dr. Stillman P. Getchell, both of Wolfboro. No similar cases preceded or followed those about to be reported, which affected three out of four members of one household.

Mr. and Mrs. M. visited New York City in November, 1903, and while there they sent home to Wolfboro a green parrot, which arrived November 7. They returned one week later. The parrot had a bloody diarrhea and died November 21. It was kept in the sitting room occupied by Mr. and Mrs. M., and was cared for especially by their domestic, Mrs. J., and somewhat by

Mrs. M. The fourth member of the household was Mr. J., the husband of the domestic; but Mr. J.'s work kept him throughout the day away from home, while the head of the house, Mr. M., spent much time in the room where the parrot was.

Case I.—Mrs. J., a young woman of previous good health, was taken ill suddenly November 25, eighteen days after the parrot arrived and four days after it died, with prostration, pain in the right scapula, a temperature of from 102° to 103° F., vomiting and constipation. The temperature was about 103° F. for a week, then was normal three or four days, and rose again, remaining elevated for a week, and finally terminating by lysis, with the slow recovery of the patient. There was no cough.

Case II.—Mr. M., aged sixty-two years, once had a severe attack of typhoid. His habits and general health were good, but eight years ago he suffered severely from prostatic trouble, complicated by an abscessin the scrotum, which caused destruction of both testicles and was followed by apparent atrophy of the prostate gland, with considerable relief of the bladder symptoms. For some days previous to his present illness he had seemed languid. On November 29 he was obliged to go to bed with a temperature of between 103° and 104° F. and a pulse of about 100. He was first seen by me December 11, when his temperature was 103° F. in the afternoon, with a pulse of 104 and a condition, according to Dr. Scott, much more favorable than some days before. The leucocyte count was 8,640. The tongue was rather dry but clean. The respirations were about 28 per minute, and there were no marked pulmonary symptoms. The walls of the radial arteries seemed calcified, and the aortic second sound was accented. When seen by me again on December 16 the white count was 5,780. There were moist râles in both bases, especially posteriorly, with slight dulness and diminished respiration in the lower part of the axilla and back, on the right side; but no bronchial respiration could be detected. The throat contained a thick, viscid, and almost membranous secretion. He had been rather worse since December 11. He was somnolent and had Cheyne-Stokes respiration. On December 23 he was again seen by me and seemed to be slowly improving, but on the seventeenth he had a severe chill with great prostration, and on the eighteenth two similar attacks. These, however, seemed to be referable to cystitis, with offensive, purulent urine, which improved upon the administration of urotropin, with gradual and permanent convalescence.

Case III.—Mrs. M., aged sixty-seven years, had a family history of apoplexy and diabetes. The patient had been ageing rapidly in the last two years. She fell ill November 27, and was seen by me December 11. There was high fever and delirium, with constipation. The leucocyte count was 13,200. The pulse was 120 per minute, and Dr. Scott stated that it had been growing progressively weak and rapid. The chest was full of moist râles, which in some places seemed high-pitched, but no distinct consolidation could be made out. The abdomen was soft; no enlargement of spleen or liver could be detected, either in her case or that of her husband. Within a day or two her condition became still worse, but it was improved by a purge, and by the injection of normal saline solution with adrenalin. On December 16 the white cells numbered 8,960. There was a white deposit in the mouth and throat which proved to be thrush. While moist râles could still be heard in both lungs, they were fewer than five days previously, and now coarse dry râles were audible. The heart was stronger. From this time she improved quite rapidly. On December 11 and December 16 the Widal test proved absolutely negative in both Case II and Case III. On December 16 paratyphoid and paracolon tests were likewise negative.

The general aspect of the case should be mentioned. It was well described by Dr. Scott and Dr. Getchell, when I first had the honor of meeting them, as being more like typhoid than anything with which they were familiar, but yet probably not typhoid fever. Temperaure charts of both Mr. and Mrs. M. accompany this report. No eruptions developed in either case.

With regard to the etiology. As has been said, no similar cases existed in the village. The sanitary condition of the house had been brought into question. It occupied an elevated and healthful location, but the plumbing was defective. The pipe leading from the kitchen sink to the cesspool, into which all the waste material of the house was drained, had no trap, and furthermore, it did not reach to the surface of the water in the cesspool, so that there was a free access of the air from the cesspool into the kitchen; but there had been no change in the plumbing for three years, and for months a peculiar smell had been noticed occasionally in the kitchen.

Conditions such as these are highly undesirable, and they do promote illness by depressing the general condition of the occupants of the house and rendering them vulnerable to specific infectious agents, but it seems unlikely that they can account for so explosive an outbreak in persons who for several years were accustomed to them.

If Mr. and Mrs. M. brought some infection with them from New York, it is difficult to explain why the domestic fell ill before they did. Moreover, influenza, the likeliest disease to be considered, has usually an incubation period of two or three days, while they returned eleven days before the first illness occurred.

The advent and demise of the parrot were not known to me until my second visit, December 16. I then invited the cooperation of my friend, Dr. Oscar Richardson, assistant in the Clinicopathological Department of the Massachusetts General Hospital, and his report is as follows:

Bacteriological Report.

At the request of Dr. Vickery, I made, in December, 1903, examinations of blood taken from the cases which are described in his paper.

The blood examined came from Mr. J. H. M. and Mrs. J. H. M., and was subjected to the following agglutination tests. The blood from each case was added to the bouillon cultures, twenty-four hours old, of a known typhoid bacillus and a known paratyphoid bacillus, in the proportions of one of blood to ten of culture, and observed for half an hour. On the expiration of the time of observation, all the tests were found to be negative, so that higher dilutions were not made.

A short time later more blood from each case was obtained and further tests made with different strains of typhoid bacilli and bacilli of the paratyphoid-colon group, but all the tests were negative.

Finally an agglutination test was made with a bouillon culture of streptococcus-like micro-organisms recovered from the spleen of the parrot associated with the cases under consideration, but this test, like the others, gave no evidence of any reaction.

Stained cover-glasses of the blood were also made and examined, but no malarial organisms were found, and the blood showed nothing worthy of note, except for a slight increase in the number of leucocytes. Cultures were made from the throats of these cases, but the growths obtained showed nothing unusual.

At the time when the cases under consideration were taken ill they had in their household a sick parrot, which finally died and was buried. As soon as this fact was learned by Dr. Vickery the parrot was exhumed, packed in a box and sent to the laboratory, where it was received on December 21, 1903. The bird had been buried for about a month.

At the autopsy, which was held immediately, the body of the bird gave forth no marked odor and outwardly showed nothing worthy of note. On section the viscera presented no demonstrable lesions, and the post mortem changes, which were well marked in the intestines, were not apparently so far advanced in the solid organs. The brain was not remarkable.

Cover-glasses were made from the heart blood, liver, spleen, and the marrow of the wing bones and stained with Löffler's blue and Wright's blood stain, but on examination no bacteria or other micro-organisms were found.

Aerobic and anaerobic cultures were made on blood serum from the following sources: Heart blood, liver, spleen, the marrow of the wing bones, and the brain. After forty-eight hours in the incubator at 37° C., the cultures showed no visible growth, with the exception of the aerobic culture from the spleen. This culture showed on the surface of the medium, one small, round, gray-white colony, and its water of condensation had a slightly cloudy appearance.

Microscopical examination of the cultures showed that no bacteria were present in any of them except in the aerobic culture from the spleen. The single colony in this culture was found to be a micrococcus morphologically and culturally like the streptococcus. The water of condensation of the culture from the spleen was found to contain a similar organism to that in the colony.

A guinea-pig was inoculated from a twenty-four-hour-old subculture in bouillon from the colony, but the animal remained unaffected after many days.

This streptococcus-like micro-organism found in the culture from the spleen is, therefore, regarded as having no etiological relation with the unknown cause of death of the parrot, and it is probably a contamination.

It is to be regretted that an examination of the parrot could not have been made about the time of its death, as it seems quite probable that by cultures and cover-glasses made then, any bacterium that might have been the cause of the possible infection of the bird would have been discovered.

These negative results of the various tests and examinations recorded above are disappointing, but they are of considerable importance in ruling out those diseases the atypic forms of which psittacosis resembles. [Here ends Dr. Richardson's report.]

To sum up, three occupants of one house are taken ill almost simultaneously and two nearly die of a disease corresponding fairly well to the descriptions of psittacosis, and not easily placed in any other category. The time elapsing after the arrival of the suspected parrot corresponds to the period of incubation in psittacosis. The milder attack of the young patient is according to the rule. The only member of the household who escaped illness has had little to do with the parrot, but is the husband of one of the patients, Mrs. J. H. M.

A personal visit to the dealer in New York from whom the parrot was purchased had no satisfactory result. In another shop which obtains its parrots from the same wholesale house, I learned that three employees had been ill this spring, two with pneumonia and one with an attack of grip.

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THE DISTRICT NURSE IN HER RELATION TO CASES OF PULMONARY DISEASE.[1]

BY ARTHUR WILLARD FAIRBANKS, M.D.,
OF BOSTON, MASS.

Excepting the contagious eruptive diseases there is perhaps no class of disease with which you come more often in contact, in your district work, than the various affections of the lungs. A few remarks on these conditions, and the relation of the hygiene of the home to their treatment and prognosis may not be without interest to you in your work.

In perhaps no other form of illness is your opportunity for the accomplishment of much and lasting good greater than in cases of pulmonary disease. Nowhere in the domain of medicine today is the fight against ignorance and superstition as great as it is against the beliefs in regard to the class of cases of which we are speaking. Your share in this contest is a great and important one. By unremitting effort it is in your power not only by your work to greatly aid the physician in his attempt to relieve his patient, but also to prevent the occurrence of many a similar case of illness.

Let us first consider the single matter of *ventilation*. While a proper supply of fresh air, in other words oxygen, is a necessity for the well, if they are to remain well, it is all the greater necessity to the sick, if they are to recover their health. But it is obvious to you that in no form of illness is an adequate supply of oxygen so requisite as in pulmonary disease; and in no class of cases is the popular fear of fresh air so great as in these very cases. Here is therefore where the battle must be fought, and, by regulation and constant supervision of this factor alone, from the standpoint of both cure and prevention, your opportunity for good deeds is boundless.

In the majority of other affections we can do without the function of the organ affected for a greater or lesser length of time, in part at least. We may even take deliberate measures to restrict its action for the sake of the benefit derived from the rest so obtained. Even in the case of the heart, when it is diseased, we can to a certain extent quiet its action, so as to afford it relative rest. But through the lungs must constantly flow, day and night, in consciousness and in sleep, that vital current necessary to all animal life, that element essential to the welfare of every portion of the body.

Consequently, whatever the condition of the individual in whole or in part, the lungs must continue, without intermission, to perform their duty or death results. When, however, the organ itself is diseased it is obvious that its function must be more or less impaired. Important then as is a full supply of oxygen to the lungs in health; how much greater is that necessity when their function is impaired by disease. Since we cannot stop their action and give them rest while they are recovering, and since we know that, crippled as they are, they cannot fully meet the demands of the body for oxygen, we must favor them all we can by furnishing them with as free and abundant supply of oxygen as possible, that they may answer this demand with a minimum expenditure of effort. The greater the involvement of the lungs by the disease, the greater naturally is the impairment of their function, and thus it happens often that the *best* we can supply of Nature's air does not contain sufficient oxygen to compensate for the diminished ability of the lungs to absorb it, and we are then informed by the increasing dyspnea and deepening cyanosis that we must furnish it in more concentrated form, or death will ensue.

We then, as you know, have recourse to the inhalation of pure oxygen.

Perhaps I cannot better illustrate the subject than by mentioning a case typical of those which you see in the work you are doing. A few weeks ago I was called to see a boy of about twelve years, who had been taken suddenly ill the previous night. I found the patient dull and disinclined to speak, except to complain of occasional sharp pain in the side, with high fever, labored breathing and moderate cyanosis. Examination proved it to be a case of lobar pneumonia. The room was small and perfectly dark, although there was bright sunlight outside. The one window was tightly closed, with blinds shut and curtains down. The single door opened into the kitchen in which there was a hot fire, and some clothes drying on a line, while on top of the stove was a frying-pan in full operation. The two windows of this kitchen opened on a narrow passageway. The atmosphere of this room may be imagined. When told what the illness was the mother remarked that she knew it was pneumonia "by the way he breathed." Yet here was her boy struggling for air, for the very element that her maternal solicitude impelled her to so carefully exclude. Solicitude it certainly was, for she made not the slightest objection, when the situation was explained to her, the bed turned, and the window opened liberally at the top, and to her faithful care in the following days the boy owed his life.

Apart from enabling the diseased lungs to do their work with as much facility as we can afford them, we also know that a blood well supplied with oxygen is furnished with effective ammunition in its war against the disease germs. This is an additional reason for pure air in pulmonary as well as other diseases. Then not the least consideration is the comfort afforded the sufferer. Sometimes the proper ventilation of a close stifling sick-room reacts on the feverish patient somewhat as does a light sponge bath in the case of a feverish restless child. Refreshing peace and sleep takes the place of fretfulness and unrest.

The subject of fresh air, however, brings us to a consideration to which we must come, sooner

[1] Lecture delivered to the nurses of the Instructive District Nursing Association, Boston, April 28, 1904.

or later, in everything we do in life. This is the subject of *moderation*. We must temper our acts with judgment in this as in all things. We must consider the case, our patient before all else. We must not fear to supply Nature's tonic in full dose when sure that it will be well borne. On the other hand we should not hesitate to protect our patient if our judgment warns us of harm. I cannot but feel that we have sometimes gone too far in our enthusiasm for fresh air and have occasionally forgotten that fresh air is not necessarily *cold* air. I think the pendulum of enthusiasm will swing back in time until it occupies a point not quite midway, but a little to the side of the present view, for it is certainly better to err on the side of too much fresh air than to sin in the other direction. I urge you strongly however, of the necessity of some care in the exposure of young children to too cool air. The younger the child the greater the need of caution. We must remember the sensitiveness of the mucous membranes at this period of life and especially in a class of cases of which I will speak later. The common fear of fresh air is really a fear of cold air and arises from the frequency with which disease is attributed to "taking cold." It is well to explain to the layman that the "taking cold" undoubtedly does diminish our resistance, and renders one more likely to contract certain diseases, such as pneumonia if we are exposed to it, but the disease once started is not made worse but materially better by the breathing of fresh moderately cool air.

The Temperature of the Sick-Room in Pulmonary Affections.—This is also a matter largely coming under your supervision and one of considerable importance to the welfare of the patient. In general it may be said that the temperature most suitable for other cases of illness is also that indicated for pulmonary affections. We shall find some variation necessary according to the nature of the case. An average of perhaps 65° F. is best, somewhat lower where there is high fever, sometimes a little higher in certain cases, as we shall see later. This matter of the temperature is closely associated with the degree of dryness of the atmosphere, a very important consideration in affections of the lungs, which we will notice more minutely in a moment. It should be borne in mind that in those cases where we desire the air to be moist and employ means to that end, the temperature of the room should be kept *considerably* higher than the above average.

Other things being equal, an atmosphere of higher temperature is capable of holding more moisture in suspension. In cases requiring a dry atmosphere we may have it warm or cool according to the means we employ to produce the dryness. We shall also see that the temperature most suitable for our pulmonary patient is materially modified by his age, by his state of vitality, and by the disease from which he is suffering. The young and the aged are much more sensitive to cold air and especially to a *sudden reduction* in temperature than are the middle-aged. They not only acquire affections of the lungs and bronchi under these circumstances, but, when already afflicted, are much more likely to be made worse, or to suffer a relapse when convalescent. In these cases when for some special reason it is necessary to cool the sick-room, it should be done gently and gradually. *Evenness* of temperature in these cases is a desideratum. Into this same class must be placed also those of our ordinary patients whose vitality is reduced by disease. They become for the time being, amenable to the rule for the extremes of life.

Another important consideration ordinarily overlooked, I think, is the life to which our patient is accustomed. We should consider whether he has been accustomed to an active out of door life or whether he lives most of his time in overheated, poorly ventilated rooms. In the former instance his resistance to, in fact his need of cool stimulating air may be great. In the latter case, while his need may be equally great, his capacity of receiving the same is infinitely less. So here again the question of *rule, tempered with good judgment,* plays its part. There is a fact of much importance in connection with the temperature of the room, especially in affections of the lungs in children.

In the average room, even in well-built houses of the better class, the temperature *near the floor is considerable lower* than it is higher up in the room. This is all the more likely to be the case in the dwellings of the poor. Thus the little one sitting on the floor, or in a low chair, or when running about, is exposed to a different temperature than that of which you are cognizant judging from your feeling or from the reading of the thermometer higher up on the wall of the room. Not only is the air cooler in the lower strata of the room, but it is almost invariably in *motion*. The more windows and doors there are the more marked are the currents of air sweeping along the floor. In a sensitive child suffering from acute or subacute bronchial affections this fact becomes of prime importance. Many such children are not confined in bed but are up and about the room. In the middle of the forenoon or afternoon, the child becomes sleepy and is laid on the bed. As soon as the child falls asleep the mother is overpowered by the fear that he will "catch more cold" and usually covers him warmly. After an hour or two he awakes, often in a state of perspiration, and wishes to get up. The mother takes him up, and, busied with her work, puts him on the floor to play. With warm and relaxed skin he is immediately subjected to the cooler air and the drafts along the floor. He "gets more cold," the inflamed condition of the bronchi is still further perpetuated and days of gain are lost. A well child in this way often acquires a bronchitis, while the mother wonders how it happened when she covered her little one so solicitously while it was sleeping. I am con-

vinced that many colds and lung troubles are contracted by children in this way.

In the case of the aged with enfeebled circulation in the lower limbs, this same difference in the temperature and movement of the air may be productive of harm. This is a very difficult matter to control. In the case of the aged, if, as is usually the case, they must sit most of the time quietly in a chair, much of the harm may be obviated by having them use a chair of rather more than the average height, and rest their feet and legs on a support of nearly similar height. When it becomes necessary for change of position to place the feet on the floor, a light shawl should be wrapped about the feet and legs. The best place for children is the bed if the affection is acute, or if a child during convalescence continues to have exacerbations of the affection.

The problem of perfect ventilation is far from solved even in the most modern homes.

I have already referred to the degree of *humidity* as a factor of importance in diseases of the lungs. This factor in the homes you visit varies even more than the temperature. In the one case your patient is subjected to the torrid and humid atmosphere of the family kitchen, surcharged with the steam from the wash-boiler, and tubs, or the cooking dinner. In another case, in a little room more remote from the constant heat of the kitchen, our poor sufferer lies or sits in an atmosphere completely deprived of the moisture it *normally* should contain, by an air-tight stove or a charcoal burner or similar contrivance, while occasionally in some favored family able to afford the luxury (?) you find the atmosphere made utterly irrespirable by a gas stove. All of this variation of cource irrespective of the type of disease from which our patient is suffering. You may judge the effect of the former state of affairs on a poor sufferer with bronchial tubes filled to overflowing with excessive secretion; while you will surmise that the atmosphere last described is not the one most soothing to our patient with his bronchi inflamed and swollen and dry, devoid of even the moisture they should normally possess.

In the case first described, if you cannot move the patient you had better have the tubes removed and the dinner cooked under the auspices of a charitable neighbor, if one can be found. That is, of course, if the family submit. If not, there is nothing you can do, except to pray that your patient may recover in spite of his friends. In the case that is being slowly dried fortunately the requirements of the situation are more easily met. Here you can take a tea-kettle, or any available receptacle, partially fill it with water and set it on the stove, thereby giving the thirsting bronchi welcome relief. Thus you see again there is a happy mean, in this as in other respects, which we should follow until we find that the particular character or stage of the disease demands more than the normal or less than the normal degree of moisture in the air the patient breathes. We shall find that sometimes it is necessary to surcharge the air with water vapor while in another instance we must subject the patient to a dry atmosphere. This is something the physician must direct, but until he does so it is for you to keep the air of the sick-room as near the normal as possible.

There is one other factor of the atmosphere of the greatest importance in lung affections, and this is its degree of *contamination by injurious gases and dust.* In all affections of the bronchi and lungs the very keynote of treatment is to remove all source of irritation from the air that, when breathed by the patient, must pass over the sensitive and inflamed mucous membrane. Yet in many of the homes into which you go the conditions are in the highest degree unfavorable to the attainment of this end. Not only do improper stoves fill the air with noxious gases, but ignorance in the use of even suitable apparatus is widely a source of injury, even among the supposedly more intelligent class. Then within a city's limits, with clouds of dust from the streets and the air filled with soft coal smoke, it becomes a matter of the greatest difficulty to shield our patient.

In the home itself, while often other forms of dirt are blissfully tolerated, a little dust resting for the time being at least harmlessly, is whisked into the air with a duster or a broom. No real thought of its *removal* is entertained. It is quite sufficient if it is sent into the atmosphere, to settle down after a time somewhere else, in a thinner, and consequently less visible, layer. Some of us I am sure have lived through the experience of seeing a chair, in anticipation of our occupation, hurriedly dusted off with a cloth infinitely more dusty than the chair, thereby sending our patient into an attack of coughing, to show us how much he was really capable of suffering without complaint. With dust teeming with bacteria, you may easily appreciate how a bronchitis of mild degree and with comparatively clean mucus secretion is converted into a severe purulent or even fetid form. There is also the danger of implanting in a lung whose vitality is impaired by the comparatively simple inflammation, disease germs of a much more serious form. Never permit a room to be dry swept or dusted while occupied by a pulmonary patient.

The *diet* in affections of the lungs should be, as for the well, the most nutritious obtainable, and of some variety, except in the presence of fever, when the rules as for any fever prevail. In such cases with the light liquid diet may be used the demulcent drinks mentioned later.

In acute cases, and especially in the later stages of convalescence and in subacute cases, the bronchial affection is but a part of a general depression in the function of the mucous membranes; and the stomach and intestinal tract suffer as well as the bronchi. Therefore in these cases there is frequent loss of appetite and inability to digest ordinary food.

Bathing.—If properly done and with certain precautions as to temperature of water and room, baths cannot be objected to, with the exception of very acute cases of bronchitis and in the aged or very feeble patient or where some exceptional feature of the case renders the amount of disturbance involved by the bath unwise, as for instance in cases with a tendency to pulmonary hemorrhage. After a bath, whether sponge or full bath, it is beneficial to warm the extremities by wraps if the patient is up, or by hot water bags if in bed. The temperature of the water used will depend somewhat on the particular features of the case, the age, the presence or absence of fever, etc. The temperature of the room in which the bath is taken should be comfortable, without drafts, and *especially not too warm.*

The mistake made by the layman is the taking of the bath in a close and overheated room. The effect under such circumstances is profuse perspiration and it is from this fact and not from the bath that he "takes more cold." Be especially careful in this respect where, as is occasionally the case in certain pulmonary cases, cold baths or cold sponging of the chest are ordered. It should be done in a *cool room*, the drying and the dressing accomplished as rapidly as possible, the clothes being slightly warmed. If you do not take precautions to have these rules observed, the very fact that he is to use cold water will induce the patient to take the bath in an overheated room and very probably he will take it as near the stove as possible. The effect of such a bath is *exactly the opposite* of that intended. The reaction of the cold water which, after the skin is dried, should consist of a warm dry glow, is followed on the contrary by a profuse perspiration so that the skin is moist and warm as the patient dresses, and this is succeeded by chilly sensations and cold extremities, and "more cold is taken" as he says.

Medicated baths are sometimes indicated in pulmonary affections of a chronic nature. The most useful perhaps and possibly the only one available among the class of patients with whom you are dealing is the salt bath. This is best made by using sea salt, obtained by the evaporation of sea water. It may be procured very cheaply. The bath may be a warm full bath, taken at night, or cool salt water sponging may be employed in the morning. The former is preferable I think. These baths are very useful adjuvants to the other methods of treatment in certain bronchial affections.

Massage is occasionally useful in certain affections of the lungs. It may be employed over the chest and accessory muscles of respiration to increase the power of expansion of the lungs. It may be used generally to assist the circulation or over the muscles of the extremities to diminish the impairment of muscular power incident to confinement and disuse. It is especially useful in conjunction with the baths in certain affections of which I will presently speak.

Inhalations, the superintendence of the administration of which usually comes within the province of the nurse, are used with great advantage in pulmonary disease. Steam impregnated with the vapor of creosote, turpentine, terebene and benzoin, oil of pine, eucalyptol, thymol, chloride of ammonium and iodine, is used. This is accomplished either by placing some of the substance in a vessel of water which is kept steaming or boiling over a stove or lamp, filling the atmosphere of the room with moist medicated vapor; or some may be placed in a pitcher or bowl of hot water and inhaled directly. In the latter case I have found a cone made of a newspaper and placed with the large end over the pitcher, and the small end over the patient's mouth, a very useful and practical expedient. Finally the medicated vapor may be obtained from a steam atomizer, where one can be afforded. Use the above mentioned substances in the following strength:

R Creosote ½ to 1 dram to the pint of water.
Carbolic acid ½ dram to the pint of water.
Camphor (spt. camph.) 1 dram to the pint of water (at 140).
Terebene ½ dram to the pint of water.
Turpentine.
Eucalyptol
Thymol
Benzoin (tr. comp.)
Oil of Pine.
} ½ dram to the pint of water.

If to the latter substances, after they are placed in the water, is added, a dram of light carbonate of magnesia, the diffusion will be aided.

The chloride of ammonium may be used dry by heating a little in a spoon over a lamp. The camphor and the terebene are best used in the pitcher or bowl by direct inhalation.

The inhalation of oxygen will be mentioned in connection with pneumonia.

Counter-Irritation over the chest is sometimes very useful in affections of the lungs. It takes the form of stimulating liniments or poultices. These contain slightly irritant substances that dilate the small blood-vessels of the skin and probably stimulate reflex nervous action; in these ways influencing the circulation and the capacity of the smaller bronchi and air cells. Heat, it should be remembered, acts in this way. The liniments usually contain ammonia, camphor, turpentine, capsicum, cinnamon or similar substances. The poultice may be made of flaxseed or wheat flour mixed with mustard or other spice. Some care to avoid blistering is requisite, especially in the case of children. If the flaxseed poultice is large, mustard may be added to the amount of one or two tablespoonfuls, in which strength, unless the skin is very sensitive, it may be left on some hours.

A good poultice for the chest of the young child may be made by mixing mustard with wheat flour in the proportion of one to twenty and then making it into a paste. This will usually redden the skin without danger of blistering it. A heavy poultice should never be applied to the

chest, especially when there is difficulty in breathing. A few drops of oil over the surface of the poultice will prevent its adhering to the skin. A piece of very thin paper placed between the poultice and the skin will do the same and enable the poultice to be applied hotter, and aid in the retention of the heat. Tr. iodine is sometimes painted on parts of the chest as a counter-irritant and is sometimes useful. When used it should be painted over a small area until the skin is dark and then not applied again over the same area.

We come now to the mention of certain substances used *ad libitum* in the form of drinks in bronchial affections. With the supervision of the preparation of these demulcent preparations the nurse is naturally entrusted. They are very useful adjuvants to the more vigorous treatment and it has been my experience that ignorance of the preparation of these simple but useful preparations is almost universal among the poor of our cities. These drinks are so inexpensive that they are universally accessible. They are made from starchy or gummy substances. Among these may be mentioned: Flaxseed, althea or marshmallow, gum arabic, slippery elm, arrowroot, licorice, Iceland or Irish moss, and the ordinary starch gruels, *made thin*, such as barley or oatmeal. Some practical directions for the preparation of these drinks may, I think, be useful to you.

Flaxseed Tea.—Pour a quart of boiling water over four heaping tablespoonfuls of whole flaxseed, cover lightly and allow it to steep on the back part of the stove for four hours. Then strain through linen. Flavor with lemon, and sweeten if desired.

Marshmallow Tea.—Take two ounces of dried marshmallow root and one ounce of good raisins; add five large cupfuls of boiling water and boil down slowly to one half. Strain without using pressure. These amounts may be doubled (making twice the quantity) if it proves acceptable to the patient.

Slippery Elm Tea.—Pour a quart of boiling water on two ounces of slippery elm bark; cover lightly and allow it to stand near the fire for three hours. Strain.

Arrowroot Tea.—Mix thoroughly three tablespoonfuls of arrowroot with two tablespoonfuls of white sugar and the peel of a third of a lemon; add a pinch or two of salt and a quart of cold water. Set on the fire and boil for a few minutes.

Gum Arabic Water.—Take a quarter of a pound of white gum arabic, a quarter of a pound of rock candy and a large thinly sliced lemon. Pour onto this a quart of boiling water and, constantly stirring, keep it in a warm place until the gum is dissolved.

Irish or Iceland Moss.—Wash half an ounce of the moss in cold water. Put it into a quart of water and boil gently for fifteen minutes, then strain and sweeten, and flavor with lemon, or white wine may be used if available. All of these preparations may be taken freely and frequently during the day. For use in bronchial or throat affections they are better when taken hot, or warm at least.

To the flaxseed tea licorice may sometimes be added with advantage, in the proportion of half an ounce of the bruised licorice root added before the water is poured on; or two teaspoonfuls of the powered licorice, to the above quantity, added after the tea is made. Gum arabic may also be added to the flaxseed tea if desired. It should be added after the tea is made. The whole gum should be used, *not the powdered acacia.*

We will now briefly consider some of the more common of the pulmonary diseases with which you meet, and that portion of the treatment which may come within a nurse's duty.

Of all these affections, bronchitis in one of its various forms is the most frequently met with. In these cases it is for you to see that the temperature of the room is that proper for this class of case, taking into consideration the age and vitality of the patient, and that, once established, this temperature is kept even, without sudden and unnecessary fluctuations; that the room is not laden with moisture or its atmosphere dried to the point of suffocation; that the diet is simple and nutritious; that proper clothing is worn, especially that the *feet and legs* are kept warm and dry. If pain and soreness in the chest becomes troublesome, as is not infrequently the case, it will devolve upon you to superintend the preparation of a poultice or the application of a liniment. If baths are required, for medicinal reasons in any case, or for cleanliness in cases of some duration, it becomes your duty to see that they are properly employed with due regard to the precautions mentioned under this head. In very acute cases baths should as a rule be avoided.

In cases *with much restlessness* and *exceptionally high fever* a light sponge bath, with a little alcohol added to the water, will not be objectionable, in these acute cases, and will prove grateful and quieting, especially with children. Such baths should be given under your personal supervision, however. Finally, you may greatly assist in the relief of these cases by preparing, or directing the preparation of, one of the demulcent drinks mentioned above. Inhalations are used with great benefit in these cases and may be prepared as already described. Sedative remedies such as benzoin, in the form of the compound tincture, are perhaps more universally beneficial, but sometimes the more stimulating vapor of turpentine is required, or the stimulating and antiseptic action of creosote is useful, especially in chronic or subacute cases.

Chronic bronchitis, as met with in these homes, is one of the most intractable of diseases, and usually requires for its successful treatment a complete revolution in the patient's mode of life. This you can rarely bring about, and it remains for you to approximate success, as nearly as possible, by attempting to secure the cooperation of

the patient and the members of his family in the observance of the "hundred and one" little details of personal and general hygiene, in the faithful observance of which, in conjunction with the special treatment, success is *alone* to be obtained. Perhaps the most pathetic and trying among these cases are those seen in children; chronic or subacute cases that linger for weeks or months; defying all our efforts to relieve them under the stubbornly unfavorable conditions of the home; until some kind fairy carries the little one off on "Country Week," removes the handicap under which it has been struggling, drops it down in the midst of green grass, warm sunshine, pure air and food; and light returns to the eyes, and color to the cheeks, and rest to the tired lungs.

While these children are at home they must be protected from dust; they must have pure air to breathe, day and night, but they must be shielded from strong cold winds and sudden extremes of temperature; they should be out of doors while the sun is high and warm, but they should not be exposed, as a rule, to the cool damp air of evening; they should not be allowed when once in bed, to get up and run to the door or windows, as is frequently the case; the under clothing should be of wool, of medium weight *not heavy,* except in the very hottest weeks of summer, when cotton, preferably with small admixture of wool, may be substituted, the feet especially should be kept dry and warmly clad; the food simple and nourishing, and above all properly prepared. Unless some exceptional reason to the contrary exists, these cases are much benefited by salt baths; warm full and fairly strong salt bath at bedtime and a sponge off in the morning with cool, but not cold water, with a small amount of salt added. This should be done only with the consent of the attending physician, since there may be some reason in the individual case why the procedure would not be advisable.

Chronic bronchitis in patients well along in years, is frequently associated with an emphysema, a relaxation and dilation of the air cells, frequently accompanied by a spasmodic constriction of the small bronchi. This causes great distress in breathing, which is at times very difficult to relieve. Systematic compression of the lower half of the chest, on each *expiration*, over a period of ten minutes three or four times a day, will give these cases a certain amount of relief, in addition to the other treatment. Some relative or friend may be taught to do this very well. Massage of the chest and the respiratory muscles is also sometimes beneficial. In conclusion we may repeat that the element of dust in the atmosphere must be as far as possible eliminated, in every case of bronchitis, in every stage of the disease.

Constipation sometimes incident to the disease and at other times dependent upon the astringent effect of sedative cough mixtures, must be relieved by simple laxatives.

Pleurisy.—The feature which you are sometimes called upon to relieve in this condition, in the absence of the physician, is pain. The sharp pain in the side characteristic of this disease in some of its stages, may be relieved by a small mustard poultice over the site of pain; or tincture of iodine may be painted over the spot. If these measures do not relieve it the pinning of a towel or band tightly about the chest is sometimes effective, or better still an adhesive plaster band around that half of the chest will give relief.

Acute Pneumonia.—In no disease must the nurse be more vigilant than in this. There is not so much left to her own initiative, however, in this disease as in some other pulmonary affections, but she must constantly watch for the signs of pulmonary or cardiac failure and be ready to meet them with the administration of oxygen and the usual stimulants. Deepening cyanosis, increasing difficulty in breathing and the supervening of stupor or coma, are indications for the use of oxygen. Preferable to the use of the mouthpieces coming with the inhaling apparatus is an ordinary glass funnel, of a size dependent upon the age of the patient. The oxygen should be allowed to flow out, as indicated by the water-bottle, quietly and steadily, not violently and wastefully, as I have seen it used. The pain of the initial stage is due to pleurisy and may be somewhat relieved by the application of hot poultices. They should never be large and heavy. Other methods of relieving the pain, such as cupping, or the administration of morphine which sometimes becomes necessary, would hardly be done except by direct order of the physician. If fever is high and delirium is present an ice-cap may be employed.

Acute pneumonia, being a disease of comparatively short duration, we do not usually mind a temperature of considerable degree, provided the patient is in otherwise fair condition. It occasionally becomes necessary, however, to reduce an excessively high fever, which in itself seems to threaten our patient's welfare. This we attempt to do by a cold sponge and, in the absence of effect from this, we may use the cold-pack. Only very rarely should the cold full-bath be employed. For children a hot full bath at 105° F. with a few handfuls of mustard added to the water may be used with benefit. The child should be taken from the bath and, without being dried, is immediately wrapped in a blanket. Profuse perspiration usually occurs and is often followed by restful sleep.

At the end of a pneumonia, during the crisis, when the dyspnea is relieved and the temperature is falling, a period sometimes comes when the heart, which previously has perhaps been working manfully against great odds, fails. Then is the time when the nurse is often called upon to act quickly, intelligently, and vigorously, to rally the failing forces of life. Subcutaneous injections of atropine, nitroglycerin or strychnine in full doses are indicated, and alcohol and caffeine by the mouth. In the case of a child a hot bath

may be given under these circumstances and aromatic spirit of ammonia given by the mouth. A very good stimulant for hypodermic use in children in cases of extreme collapse is ten minims of a solution of camphor 1 in ether 10.

Occasionally changing the position of a patient, will sometimes give much relief to the breathing, and in young children, who do not invariably think to take the posture most comfortable for them, should always be borne in mind by the nurse. It should be remembered that pneumonia is an infectious disease and under certain conditions may be transmitted from one person to another. The sputum should be carefully cared for, and it is an excellent plan to disinfect it as you would tuberculous sputum.

Tuberculosis of the Lungs.—In the world's battle against this treacherous foe you are now taking, in your district work, an active part. It is hardly necessary perhaps to enter into the details of the defensive and offensive methods of warfare waged against this disease. Knowing the source of danger, the lines of defense become fairly well defined and, as might be supposed, are more readily carried out than measures directed toward the subjugation of the disease, once it has invaded the system. Defense of the individuals living in the immediate environment of the source of the tuberculous contagion must be regarded as the first and most important duty of every worker in the army moving against this "great white plague." The victim must be given a bed to occupy alone, and, where possible of course, a room by himself. The sputum should be collected with most scrupulous care. If the slight expense of the folding paper cups with which you are doubtless familiar, is an insurmountable obstacle to their use, an ordinary cup containing a little of a five per cent. solution of carbolic acid solution is perhaps the next best thing. This can be used at home. When on the street small pieces of cotton or tissue paper may be used and placed in a rubber tobacco pouch, which is emptied into the fire on the return home, and the pouch thoroughly scalded and kept for use again. A handkerchief should never be used for any such purpose. The patient should be instructed to hold a handkerchief before the mouth during an attack of coughing, to avoid the diffusion of fine particles of sputum through the atmosphere.

As to the degree to which these precautions are carried out much will depend on your watchfulness and continued admonitions to the patient and those about him; and much, very much, on the character of the patient himself. We must be patient with him. We must not forget that we are demanding from him an expression of the noblest attribute of human kind, the highest of which the human character is capable; the thoughtful, self-forgetting consideration of others in the hour of personal weakness and suffering. Often, however, your hardest battle will be with those you are striving to protect. Affection for the afflicted, the noblest of excuses, will lead to constant and unnecessary violation of those little but potent rules of hygiene on which so much depends. And this brings us to a fact which for several years deterred many who understood the situation from taking active measures against the ravages of this disease. This was the dread lest the general inculcation of the doctrine of the contagious nature of the disease should alienate from the victim even those nearest and dearest to him. Were there ever a danger of such an occurrence, it would be due to the way we taught the truth and not to the truth itself. We must explain to the individuals of the household, that while tuberculosis is a communicable disease, it is not so in the degree in which the majority of other infectious diseases are communicated. Since we cannot exactly foretell the intimate conditions of the system that render it susceptible, certain reasonable precautions are wisely taken against wholesale and entirely unnecessary admission of the germs into the body.

With all possible precautions observed there still remains a certain element of danger for those in constant association with the patient. This danger we can greatly diminish by so fortifying the system with well cooked, nourishing food, fresh air and hygienic measures, as to render it unlikely to be receptive to invading germs.

Here we shall often be greatly handicapped by the bad habits or unhealthy occupations met with among the class of which we are speaking. We can but exert ourselves to the utmost and do the best we can. Accustoming the people to cold morning baths, to regular and sufficient sleep, to the avoidance of colds and bronchial affections, by the wearing of suitable clothing and by the maintainance of dry and warmly clad feet, will all aid in neutralizing these unfavorable conditions. We must not become discouraged by individual instances where all our efforts appear in vain, for the steadily declining death rate, in spite of the modern methods of diagnosis which ensure the certain recognition of all cases of the disease, tells us we are fighting a slow but winning fight.

In the treatment of the victim himself a maximum amount of the most nourishing food, plus fresh air, in as large doses as can be obtained, is imperative. As important as the character of the food is its preparation. Sufficient and regular hours of sleep must be instituted. Unfortunately it is often impossible to obtain the cooperation of these patients in their home, and I personally am becoming more and more convinced that the only hope for them lies in sanatorium treatment. And even in those slight cases that are at present the only ones accepted in our state sanatorium, the marked improvement almost invariably shown is ultimately lost if they return to the life of their homes again. This is especially the case with those moderately pronounced cases, too far along to gain admission to the sanatorium, but really in a favorable stage of the disease, provided the proper conditions of life could be secured for the

patient, *and always maintained.* These patients we may sometimes succeed in sending to the numerous boarding houses at Rutland where the life of the sanatorium is inculcated, and even enforced. The improvement shown by many of these patients is incredible to one who has not witnessed it, and yet I regret to say that again and again I have seen that gain in weight and color, in buoyancy and hope, melt away far more rapidly than it came, on a return to the life at home. I do not believe therefore, that it is wise to induce false hope in these patients by sending them to live for a time under such circumstances, unless there is some probability of their being able to fairly approximate that favorable life during their entire existence.

There are certain symptoms in consumptive cases which it often falls to the lot of the nurse to alleviate, and certain emergencies which chance sometimes orders her to meet. Of these we will now speak. Many of these conditions are of course, strictly speaking, within the province of the physician, but since this is a chronic long continued disease, not receiving frequent visits from the physician, you will often be called upon to relieve the temporary distress of your patient. This may often be done by simple means; applicable without harm to any case, and not involving more radical measures which you would rightly hesitate to employ. The cough, usually a marked feature of the disease, sometimes becomes, by its great excess, a source of much distress and fatigue to the patient. Where the expectoration is abundant the cough is of course necessary for its removal, and no radical measures should be employed to stop it unless the excessive secretion is checked. However, these are not, as a rule, the circumstances under which the cough is distressing. It is where the cough is dry and racking, far in excess of the expectoration, that the greatest distress occurs. Any of the demulcent drinks above mentioned may be given freely and often with benefit, especially if given hot. A small but strong mustard or spice poultice over the upper portion of the sternum may do much to give relief. Painting the spaces above the clavicles with tincture of iodine will sometimes relieve the excess of cough. A hot mustard foot-bath with hot drinks will give relief, especially in the cough that is often very troublesome when the patient first gets into bed at night. This is a very common occurrence. It may be avoided usually by warming the bed previous to the patient's retiring. Inhalations such as have been described in connection with bronchial affections are frequently of great benefit in excessive irritating cough; especially creosote. The excess of cough in individual instances is sometimes due to pleurisy, even where there is no pain. After all other means have failed therefore, the binder or plaster strip may give some relief.

The pain in consumptive cases is usually due to pleurisy and is to be dealt with as with pleurisy from any other cause. Night sweats are often a source of much discomfort. When excessive this symptom usually requires internal medicinal treatment. Some relief may be given, however, by sponging the patient with vinegar, or dilute acetic acid and water, *equal parts,* may be used. Alum dissolved in alcohol in the proportion of half a dram of the alum to the pint of alcohol makes an efficient lotion for the same purpose.

The patient should wear a light weight flannel nightgown which absorbs the moisture better than linen or cotton and is therefore much more comfortable. Fever, if reaching each day to 101° F., or over, should be treated by rest in bed. It is however no contraindication for fresh air, provided the same can be obtained with the patient at rest.

Hemorrhage from the lungs is an emergency which anyone, physician, nurse or layman, may be called upon to meet at any time, not alone in the visibly sick but in the apparently well individual. First and foremost of the measures employed to meet the crisis must be absolute physical and mental rest. Put the victim to bed and isolate him from all disturbance. Cracked ice by the mouth may be given. The cough and the peculiar nervous restlessness often seen in these cases must be relieved by a small hypodermic dose of morphine. Ice may be applied to the upper part of the chest, just under each collar bone. The subsequent care should consist in a light diet, a laxative each day sufficient to freely move the bowels and a continuance of the absolute physical rest many days after the cessation of the hemorrhage. In profuse hemorrhage it is useless to attempt the inhalation of astringent substances. Where the bleeding is slight, a spray such as the following may be tried: Take alum, six grains; water, three ounces, or Monsel's Solution ten drops in two ounces of water. Both are to be used in a hand atomizer. A teaspoonful or two of the fluid extract of ergot may be given internally, immediately, but the remedy that promises most relief is the extract of the suprarenal gland; and so important is every moment in meeting severe hemorrhage that I think it an excellent plan for a nurse who is working with many phthisical cases to carry a few tablets, or some of the powder, with her. It is given in the dose of three to five grains and is to be placed dry *on the tongue* and not swallowed but held in the mouth and allowed to dissolve. It may be repeated every thirty minutes, for three or four doses if necessary. Do not give stimulants in pulmonary hemorrhage. In closing the subject it may be added that in the case of any pulmonary disease it is an excellent plan to disinfect the expectoration or to exercise care against its dissemination broadcast by the patient. It has been found that many cases of bronchitis, even when semi-chronic, are due to the influenza bacilli, and there can hardly be a doubt that from such individuals epidemics of acute influenza may originate. In other cases other organisms are present, some of which, especially the streptococci and the

pneumonia organisms, are a constant menace to the well and may give rise to other than pulmonary disease.

MEDICAL PROGRESS.

PHYSIOLOGY.

The Effect of Caffeine upon the Vagus Center.—In small and medium doses intravenously injected into dogs, caffeine, stimulates the vagus center, according to G. Swirski, (*Pflüger's Archiv*, August 22, 1904). This is, however, an inconstant phenomenon, failing in forty per cent. of the cases. The fall in blood-pressure brought about by small intravenous injections of caffeine, is caused by a lowering of the tone of the vasomotor center by reflexaction, without the aid of the depressor nerves. The blood-pressure-raising action of caffeine is in greatest part due to a *direct stimulation* of the vasomotor center in the medulla, and to a less degree of the centers in the spinal cord. Large doses of caffeine in dogs had no appreciable effect in the heart muscle.

The Activities of Zymase and Endotryptase in Killed Yeast Cells.—The juice expressed from yeast contains a sugar-splitting ferment (zymase), a proteolytic ferment (endotryptase), and in addition inverting, diastatic reducing, and other ferments. T. Gromow and O. Grigoriew (*Hoppe-Seyler's Zeitsch.*, August 17, 1904), in an investigation of the various conditions which affect the workings of zymase and endotryptase, discover a number of facts of eminent importance from the general standpoint of the physiological significance of ferments. Killed yeast cells are found in commerce under the name "zymin," which possesses all the characteristics of live yeast except the power of growth and multiplication. Its proteolytic ferment, endotryptase, is a powerful one, whose action is strongly inhibited by saccharose, glucose, lactose, mannite and glycerin. The more concentrated the solution of saccharose, the greater is its inhibitory action. This inhibition of the above substances is in all probability favorable to the synthesis of proteids; the decomposition products of albumin inhibit the further destruction of the latter. Saltpeter and calcium chloride stimulate the action of endotrytase, while quinine and alcohol inhibit it. Substances which inhibit the latter, stimulate the action of zymase, while those that accelerate the work of endotryptase, inhibit the activity of zymase.

Inhibition of the Action of Physostigmine, by Calcium Chloride.—The study of drug antagonism is valuable from the standpoint of physiology as well as therapeutics. S. A. Matthews and O. H. Brown (*Am. Jour. of Physiol.*, October 1, 1904), have made an important contribution to this subject. They allude to the results obtained by Loeb in preventing by means of calcium of trontium chloride, the marked muscular twitchings produced by sodium citrate, tartrate, oxalate, phosphate, and barium chloride, when injected into the lymph spaces of the frog. MacCallum has shown that the marked intestinal peristalisis produced by many of the above salts, in mammals, can be inhibited by the injection of calcium chloride. Fisher found that the glycosurin produced by electrolytes is inhibited by a sufficient amount of calcium chloride. The antagonism between atropin and pilocarpin, atropine and nicotine, and atropin and physostigmin is also alluded to. S. A. Matthews has shown that the convulsions produced in tetanus are inhibited by an intravenous injection of a combined salt solution in which calcium chloride is present. The authors investigated the effect of calcium upon the action of physostigmin, in dogs. They found that the action of the latter drug in producing, (1) the contractions of the intestine, and (2) the tremors of the voluntary muscles, is counteracted and inhibited by calcium chloride; (3) the increased salivary secretion is, at least partly, counteracted and inhibited by the calcium chloride.

The Activating Substance of the Pancreas in the Metabolism of Carbohydrates.—In 1903 O. Cohnheim found that the muscles of dogs and cats contain a glycolytic ferment, which in itself is inert but is rendered active by means of the pancreas. The author (*Hoppe-Seyler's Zeitsch.*, August 17, 1904), has succeeded in isolating the principle of the pancreas which is responsible for the activation of the glycolytic ferment of the muscles. This pancreatic constituent is not affected by boiling, is soluble in water and 96 per cent. alcohol, but not in ether, and in this account is to be distinguished from proteids, ferments and, above all, from most of the constituents of the pancreas. The solubilities of the pancreatic activator, its resistance to boiling and its solubility in alcohol, show that it is no ferment, and place it in the same rank with the other and better known internal secretions, namely, adrenalin, iodothyrin and secretin. As regards the behavior of this pancreatic activator, the surprising fact is revealed that if to a constant mixture of muscle-juice and sugar, increasing amounts of pancreas be added, the action of the latter at first increases and then diminishes. This is the case whether one use the entire pancreas, the alcoholic extract of boiled or unboiled pancreas, or alcoholic extracts of the proteids to which the activator is united. The maximum of glycolytic action is found in the combination of 75 gms. muscle and 0.8 gm. pancreas. On the addition of 2 gms. pancreas, the action ceases entirely. What is the explanation of this peculiar phenomenon? One might consider that the pancreas contains two bodies, the one accelerating and the other inhibiting. Against this supposition is the fact that the phenomenon occurs with the use of the entire pancreas to the same degree as with the use of the various alcoholic extracts. The two bodies would then have the same solubilities, and yet at first the one, and later the other would act. A good analogy is furnished by the phenomenon termed by Ehrlich the "Diversion of the Complements." Neisser and Wechsberg have found that in the destruction of bacteria by immune sera, in which the cooperation, if amboceptor and complement is necessary, the presence of an excess of amboceptor inhibits, and in certain circumstances, entirely stops the action. It would appear as if the excess of amboceptor, by uniting with the available complement, prevents that union of bacteria, amboceptor and complement, which is necessary in the complete destruction of the bacteria. Cohnheim has found that blood-serum itself contains an activator like that of the pancreas, and muscles containing blood, show without the further addition of pancreas, the phenomenon of glycolysis.

The Fate of Glycocoll Intravenously Injected.—A single injection of considerable amounts of glycocoll into the blood of the dog, causes, according to S. Salaskin and K. Kowalewsky (*Hoppe-Seyler's Zeitschrift*, August 17, 1904) an increased ammonia content in the blood. The latter gets rid of the glycocoll very quietly, eliminating it partly, but to a slight extent, by means of the urine, and partly transfering it to the tissues. The fact that the glycocoll, under the conditions of the experiment, cannot be recovered from the tissues, would suggest that it there under-

goes certain transformations. It is possibly split up with the production of ammonia, which would account for the appearance of ammonia in the blood.

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There is food for profound reflection and incentive for vigorous action in the paper read before the International Congress of Military Surgeons in St. Louis, by Dr. Louis L. Seaman, of New York. We are, as a nation, not so much more astute than the holy men of the Middle Ages, who held themselves aloof in their monasteries and prayed the Divine Hand to check the tide of plague and death that rolled in the wake of war. We accept as a concomitant of war disastrous losses through preventable disease, and feel that when we have properly expressed our dismay and disgust at the corruption of the government and the shortsightedness of the powers that be, we have done all we can in behalf of civilization.

Dr. Seaman, who was a major and surgeon in the United States Volunteers during the war with Spain, has just returned from a recent observation of Japanese sanitary and surgical methods in the war with Russia. From his report it seems that no obstacle has been too great to overcome, no detail too trifling to be observed, with the result that there has been during this six months of terrible fighting and exposure in a foreign country only a fraction of one per cent. loss from preventable disease. Contrast this with the results in our own Spanish War. The actual deaths from bullets was only 268 while the deaths from disease, in camps far from the seat of war, amounted to 3,682 more than fourteen times as many.

Were we to move an army to the front to-morrow, our record would probably be the same, and yet the Japanese have only recently learned their lessons from us, and from the sources from which we draw our science. But the difference is, they believe and *do*, while we believe and don't do.

Witness the way in which they act upon the principle that an army's fighting power depends upon the quality of its rations and the observance of hygiene. The medical officer is everywhere prominent. He is with the scouts, making microscopical and chemical tests of the water and the soil, labeling wells, so that the army shall drink no contaminated water. He examines towns, and puts a cordon around any quarter where there is infectious disease. The medical officer also accompanies foraging parties, testing fruits and vegetables sold by natives, and if the fruit requires cooking or the water boiling, or if there is any taint suspected, notices to that effect are posted, and such is the discipline, from commanding officers to the rank and file, that obedience to his orders is absolute.

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present threatening the German army and worked such havoc among the English in the Boer war. It is bad enough for intelligent men to lead their comrades on to human slaughter, but it is worse for scientific men and a civilization that boasts that it depends upon science, idly to watch its compatriots walking into preventable pitfalls of disease.

We may learn a lesson from the artistic sense of proportion and the exquisite attention to detail of our Japanese friends. It is not only those who know how to contrive death for the greatest number that are put in command, but those who know how to prevent death to the greatest number; and the system of prevention is deemed as worthy of detailed care as the system of drill and attack.

Shall we, as a nation, learn this lesson which Japan has taught? Or shall we still go on shrugging our shoulders, dividing the blame between the corruption of officials and the stupidity of the rank and file?

WOOD ALCOHOL.

The lamentable state of public and private morals in its disregard of the life and happiness of others within the last week has been brought sharply to the fore in a manner that, we hope, may be highly salutary.

It seems to need the sacrifice of human lives to stir our busy people to the recognition of dangers that have for years been pointed out by the profession, whose warnings, however, have fallen on careless and unheeding ears.

The arrest of certain fraudulent drug dealers for the adulteration and placing on sale of highly valuable and at the same time extremely dangerous drugs has been referred to. Deaths, due to the use of the substituted wares, have no doubt occurred, but they have usually taken place in the sick chamber, when such a result might have been possible from disease. The harm which this criminal business has done is not measurable, but it exists.

In the case, however, of a precisely similar type of adulteration, namely, the substitution of cheaper wood alcohol for the more expensive grain alcohol in whisky, brandy, gin and other liquors, death has resulted in a number of instances, and happily has called active attention to a form of adulteration that has flourished for many years. In this case, as in the former, the guilty parties have grown greedy in their nefarious work, and instead of making ten per cent. acetanilid mixtures in their drugs, or five per cent. methyl alcohol substitutions, they have grown bolder and bolder, adding more and more of the cheaper grades of material, until finally the result of their work has become a public scandal.

Pharmacologists have told us with reference to the so-called marsh gas series of alcohols, methyl, ethyl, propyl, butyl, amyl, etc., that with the addition of the carbon and hydrogen atoms the toxicity of the compounds increases, and older chemists laid so much stress on the higher alcohols, collectively denominated fusel-oil, that heretofore practically all tests for purity have concerned themselves with these butyl and amyl compounds. Since the manufacture of synthetic wood alcohol, however, this material has been used in larger and larger quantities as an adulterant. Lacking most of the telltale odor of the older natural product, its use has escaped the vigilance of the average consumer.

Although methyl alcohol, if we are to believe the pharmacologists, is thought to be less poisonous than ethyl alcohol, nevertheless it is to be borne in mind that up to the present time not much is known of the pharmacology of the synthetic product, and there is little doubt that the wood alcohols of synthesis are not uniform.

The early researches of Dujardin-Beaumetz and Audigé with natural wood alcohol showed that this alcohol was about one-half the strength of ethyl alcohol, and later observers have confirmed the earlier findings; but it was first shown by Pohl and corroborated by Joffroy and Serveaux that methyl alcohol did not break down, as does ethyl alcohol, and even the higher members of the series, into acetic acid and simpler products, but that it remains for a comparatively long time in the organism, and that if it be taken for a continued period this slow oxidation and slow elimination permit a cumulative action and thereby bring about paralysis and death. Thus animal experiments have shown that ethyl alcohol and even amyl alcohol may be given for weeks or even months at a time and in narcotic dosage without causing death, because of the steady and comparatively rapid oxidation and elimination, whereas, with methyl alcohol the animals perished if the dosage was continued at the narcotic point for a week. Intense fatty degeneration of the liver has been a constant finding in these experimental studies.

A point of further difference has been found in the more intense action of wood alcohol on the

eye. Here its toxic action manifests itself in a most intractable form of blindness.

The extensive series of cases of this form of poisoning now being published by Drs. Buller and Casey Wood (*Journal American Medical Association*, October 1, 8, 15, *et seq.*) brings into prominence how many may be the sources of poisoning from this form of alcohol. Jamaica ginger, essence of lemon, essence of peppermint, witch-hazel, varnishes, turpentines, and colognes and scores of preparations are known to contain it.

The New York City Board of Pharmacy has not been as unmindful of its duty, we believe, as has the chemical department of our City Health Department. For some years the pharmacists of the city have been persistently followed up and prosecuted if wood alcohol has been found in any of the official pharmacopœial preparations calling for grain alcohol. The Board of Pharmacy has not always had the hearty support of the judiciary, which, to our regret, too often needs the same lessons that an ignorant public needs to awaken it to its duties, but notwithstanding such drawbacks, efficient service has been rendered by this body. If our Health Department had been as alive to its opportunities in the matter of testing alcoholic liquors in our city saloons, fewer deaths might have resulted, and this branch of the city work might have demonstrated its usefulness in as convincing a manner as has the more active medical service.

NEW YORK STATE MEDICAL ASSOCIATION MEETING.

The twenty-first Annual Meeting of the New York State Medical Association has been in session during the past week. One of the most interesting features of the meeting was the formal reception of the news that the long-looked-for, much-hoped-for, union of the two medical organizations of this State has not taken place, as was anticipated, and cannot take place until after the change in the by-laws, which will not be operative for at least a year.

Under the constitution and by-laws of the New York State Medical Association, no proper formula for the calling of a regular meeting of State or county associations was embodied. As a consequence, the action of the committees of the two State organizations was upset by the suit of a single member of the Association who claimed that proper notice of the proceedings had not been given him, nor did he wish to agree to the proposed union. The necessary change in the by-laws has been proposed, but this must lie over in the Association for a year, and until formal action is taken upon it no further steps for the union of the two societies can be taken.

This seems to be an unfortunate delay. We feel, as do the vast majority of the members of the medical profession in New York, that union of the two organizations is eminently desirable and is sure to bring good results in its train. On the other hand, we are convinced that none but good results will follow, though there are still some who think that certain evils may creep in. We are sorry that a mere legal quibble should render impotent, for a time at least, all the efforts that have been made in recent years to bring about so desirable a consummation as the corporate union of the members of the regular medical profession in the Empire State. We agree with the President of the Association, who, in his annual address stated emphatically his hope that union would take place just as soon as it could legally be accomplished, and that in the meantime both organizations should strive to interest as many physicians as possible in the idea that membership in medical organizations is sure to bring with it, not only information and help for practice, but stimulus and inspiration for scientific and clinical work and fraternal good feeling, both in professional duties and in social life.

This year's meeting of the State Medical Association has not been as successful, either from the scientific or social standpoint as those of previous years. This is not difficult to understand, and is no fault at all, either of the members of the Association or of the committee in charge of the program. Until a very short time ago it was thought that there would be no meeting of the New York State Medical Association this year, but that the united Society and the Association would hold a common and enthusiastically successful meeting. Under the circumstances the committee have done very well not to allow the meeting to lapse for the present year and to go on, in spite of discouragement, with the work of the Association.

Many of the papers read at the meeting proved of great interest and were discussed very suggestively. Some papers not on the program, but read by members, proved to be especially valuable. The present year's meeting by no means represents the true spirit nor the forceful ability of the Association, but the new board of of

ficers promises to make the next year of the Association quite as successful as any in its history, if there will not even be an actual advance in scientific and social features.

ECHOES AND NEWS.

NEW YORK.

Officers of the New York State Medical Association.—The following officers were elected by the New York State Medical Association for the ensuing year: President, Dr. J. Riddle Goffe, of New York; Vice President, Allan A. Jones, of Buffalo; Secretary, Charles Ira Redfield, of Middletown; Treasurer, Frederick A. Baldwin, of New York; Chairman of Committee of Arrangements, F. W. Loughran, of New York; Chairman on Committee of Legislation, Dr. E. Elliott Harris, of New York; Chairman of the Committee on Library, Alexander Lambert, of New York; Chairman of Committee on Public Health, Louis C. Ager, of Brooklyn; Chairman of Publication Committee, C. E. Denison, of New York; Chairman of Nominating Committee, Dr. Wisner R. Townsend, of New York; Delegates to the American Medical Association, Dr. Everard D. Ferguson, of Troy, N. Y. and Dr. Wisner R. Townsend, of New York.

Gifts to Charity Hospitals.—By his will, filed for probate in the Surrogate's office recently, Moritz M. Frankenthal, of New York, bequeathed $1,000 to each of the following named charities: Mount Sinai Hospital, Hebrew Orphan Asylum Society, Montefiore Home for Chronic Invalids, Hebrew Infant Asylum, and the Home for Aged and Infirm Hebrews.

A First Prize for New York.—It was announced by Secretary Murray, of the Department of Health, that the Department had been notified by the officials of the Louisiana Purchase Exposition at St. Louis, that the superior jury of awards had awarded the grand prize to the city of New York, for their exhibit of health charts and statistics.

Pneumonia Commission to Meet.—The commission appointed by the Health Board to study pneumonia, and endeavor to find means of preventing it, will hold its first meeting at the Health Board on Saturday, October 22. The commission will be made up of prominent bacteriologists from Philadelphia, Baltimore, Boston, Chicago and this city. After a business session they will probably be entertained at dinner at the University Club by Health Commissioner Dr. Thomas Darlington and Dr. H. M. Biggs, chief medical officer of the department. Dr. Darlington is having statistics of pneumonia for the last twenty years prepared from the department records and charts, showing the steady increase in the number of cases.

To Keep City Water Pure.—Not satisfied with his hurried investigation of the watershed conditions on Saturday, Mayor McClellan has told Dr. Thomas Darlington, Commissioner of the Board of Health, that he would soon make another trip through the Mount Kisco, Bedford, Katonah and Lake Mahopac sections. It is probable that the tour will be made in the Mayor's automobile next Saturday, weather permitting. Dr. Darlington, however, has pronounced ideas regarding the methods which should be adopted to free the Croton watershed from all sources of contamination. He is reported as having said that he did not believe in copper sulphate nor filtration systems and that the best way is to keep the water pure from the first. This can only be accomplished by seeing that the territory from which the supply is drawn is free from all the evils which have recently been discovered in the Croton watershed. Throughout the entire section of the watershed there is much building going on. This indicates an influx of persons who intend to reside there. The demand for property is increasing every year. There can be but one result—the section will become more densely populated each year, and the problem of protecting from contamination the network of small streams will soon become impossible of solution. The wholesale purchase of land in the watershed wherever there are dwellings near the lower levels of the valley, or to prevent the erection of new dwellings, would of course entail great expense upon the city. Land is held at an almost uniform price of $100 an acre, and to buy the 360 square miles in the watershed would cost more than $200,000,000. But this is what must be done eventually, if the source of New York's water supply is to be kept clean and wholesome. It seemed to him that it was not altogether a question of present necessity, but that future generations should be protected by action taken now. What will the residents of this city do twenty years or even ten years from now unless some means is devised to guard the purity of their water? Repeated efforts to obtain convictions for violations of the present laws to protect the watershed have invariably failed. When clear cases against farmers who allowed manure heaps to drain into the streams, had been made out, it was found impossible to find grand juries, made up of their neighbors, to indict them. More legislation is needed before legal restraint can be made effective.

Change at Bellevue Hospital.—The Board of Trustees of Bellevue and Allied Hospitals has received the resignation of Dr. George B. Fowler, who for many years has been the attending physician to the Fourth Division. The vacancy will be filled in the near future by some member of the medical profession of New York City who is not connected with any of the colleges, the Fourth Division in Bellevue always having been an open one, that is, not being in any way under the control of the faculties of the several colleges. Applications for the position may be made to Mr. James K. Paulding, Secretary of the Board of Trustees of Bellevue and Allied Hospitals. It may be explained that Mr. Paulding is also Chairman of the Conference Committee, consisting of two members from the Medical Board and two from the Board of Trustees. Before this Committee all names will be brought for con-

PHILADELPHIA.

Free Use of Antitoxin Urged.—Diphtheria is now prevalent in the city, the new cases for the past week showing a considerable increase over those of the preceding one. Chief Abbott, of the Bureau of Health, urges the preventive use of antitoxin to aid in limiting the spread of the disease. The city laboratory manufactures enough antitoxin to supply every physician free of charge with all for which he has need. It may be secured at any police station by the physician agreeing to furnish the Bureau of Health a history of the case in which it was employed.

Animal House for Medical College.—Contract has been let for the construction of a $40,000 vivarium for the medical department of the University of Pennsylvania. The building will be of the most approved type. Work is to be begun immediately.

Ask for Dental Corps in Army.—The Fifty-eighth Annual Meeting of the Pennsylvania Association of Dental Surgeons was held at the Continental Hotel during the past week. A resolution was passed endorsing the movement of the National Association to secure the placing of a corps of commissioned dental surgeons in the United States Army.

Stereoscopic Skiagraphy.—At the Philadelphia County Medical Society, October 12, Dr. M. K. Kassabian read a paper on "The Value of Stereoscopic Skiagraphy" and gave a practical demonstration of the principles involved. By an ingenious arrangement of plates a negative is made, as it were, for each eye and the resulting skiagraph appears as if the observer were looking directly at the object under examination.

CHICAGO.

Bright's Disease in Chicago.—The first death from this disease, according to the weekly bulletin of the Health Department, was recorded in May, 1864, but it was not until 1868 that deaths from the malady were reported in sufficient number to compute rates. In the Annual Report of the Commissioner for 1894 it was shown that the rate had increased 84 per cent. in twenty years, that it is in the decade 1885-1894, compared with that of the decade 1868-1877, and it was then said—speaking of the group of steadily increasing diseases—that: "Sanitarium administration can do little with these diseases or with the increase of Bright's disease and of diseases of the nervous system. The high tension of modern life—nowhere higher than here in Chicago—with its besetting temptations to irregular habits and to excesses of various kinds, and its great strain upon the most complex and most important mechanism of life—is something that the sanitarium can but recognize and regret; its relief and remedy will come only through saner views and modes of life." "Saner views and modes of life" have not yet arrived, and the death rate of Bright's disease has increased upward of another 80 per cent. in less than a decade— that is, from five in the 10,000 of population in 1894 to 9.09 in 1903, or 81.8 per cent. in nine years. The apostle of "The Simple Life" has not arrived in this country any too soon. Chicago needs him.

Smallpox.—Three cases of this disease were admitted to the Isolation Hospital during the week. Of these one was an unvaccinated adult, one a schoolboy ten years of age, who had been admitted on a false certificate of successful vaccination, and the third a baby of ten months not yet vaccinated. Attention is again called to the large number of smallpox cases occurring in infants and children under the school age during the first nine months of this year, as well as during 1903. The plea is renewed for the protection of children against smallpox by means of vaccination during the first year of life. In fact, the best time to vaccinate the infants is during the third month, at a time when the arms are not much used, and before the disorders attending teething have begun.

Fined $100.—A Dr. Maharg, said to be formerly City Chemist, was recently arrested, together with four women, who, garbed as Sisters of Charity, secured contributions for an alleged home for consumptives claimed to be operated by the Doctor at an empty building on North Clark Street, called the Nazarene Mission. He was fined $100, and the women were remanded.

Chicago Medical Society.—At a meeting held October 5, Dr. Hugh T. Patrick showed a case of idiopathic muscular atrophy, the patient being a young woman, twenty years of age, whose trouble began at the age of twelve. She had never been able to close her eyes tightly. She had never been able to whistle or pucker the lips normally. There was marked lordosis. At the age of twelve she was noticed to walk in a peculiar manner, with the shoulders thrown back. The muscles about the arms and shoulders were very weak, and although the deltoids were large and hard, they were weak. There was more or less weakness of the scapula owing to paralysis of the serratus. The case corresponded with the Landouzy-Dejerine facio-scapulo-humeral type. The patient had an affection of the gluteal muscles, and of the psoas and iliacus, whereas the muscles in the lower limbs were good. She could not raise her toes so as to stand on the heels. The case was atypical in distribution, in that it partook of many of the different types. The knee-jerks had almost entirely disappeared when she was admitted to the hospital, but under large doses of strychnine they became distinct, so that now they were normal. Dr. Patrick showed next a case of multiple neuritis, which manifested several interesting features. A third case was one of acroparesthesia nocturna in a young woman, twenty-three of age, who had had this trouble for two years. She was not troubled during the day. In the night she would awake with numbness and tingling which was so intense as to almost amount to pain. The attacks began in the right arm, paralyzing it for the time being, but after getting out of bed, rubbing the arm, putting it in hot water, shaking it, etc., the tingling disappeared, after which she would go back to bed. As a rule, she got this tingling only once in the night. The next case was one of cervical rib. He said cervical rib was not frequent, and most of the cases of cervical rib had been discovered accidentally, either post-mortem or during an examination for other trouble. He showed other cases of muscular atrophy and of multiple neuritis. His last case was one of Caisson disease. The patient could not use his leg below the knee. Patient worked in a caisson, seventy-five feet below the surface, in which the pressure was twenty-five pounds to the square inch. He felt no inconvenience from working aside from pressure in the ears. After working in a caisson for some time, he began to feel tingling and numbness in his legs, so that they eventually became useless. He felt this tingling in his arm also, lost consciousness, and was unconscious the first night after the attack. The next morning his legs were paralyzed. He felt dazed and confused. His arms were all right the next morning, but his legs were completely paralyzed. The speaker said that this disease could be avoided if proper precautions were taken.

Dr. Charles L. Mix reported a case of "Traumatic Neurosis associated with Tabes" in a negro. He said that the cases were unusual. Clinicians of large experience had described but very few cases. In this case the tabes was clearly traceable to specific infection, but the patient's neurosis was caused by a railroad accident.

CANADA.

Impressed with the Cure for Tuberculosis.—Dr. A. de Martigny has returned to Montreal from Paris, and states that he believes that Dr. Marmoreck's serum will accomplish for tuberculosis what Jenner's vaccine did for smallpox. Dr. Martigny went to Paris as a special commissioner for the Montreal Board of Health to investigate the new serum. He will present his report to the Board of Health at its next meeting.

Hospital Saturday in Vancouver, B. C.—Saturday, October 15, was "Hospital Saturday" in Vancouver, B. C. This is now an annual fixture in the life of this thriving, growing city of the Pacific Province. The citizens of Vancouver contribute on this day to the funds of the Vancouver General Hospital, and the Woman's Auxiliary of the institution make a special collection of the boxes which are exhibited in prominent places all over the city. Last year some $1,200 was collected in this manner.

Typhoid Notification in Ontario.—The Ontario Board of Health has issued a special circular signed by the Secretary thereof, Dr. C. A. Hodgetts, calling for the immediate notification to the local boards of health of each and every case of typhoid fever coming under professional care. The Public Health Act required both the householder and the physician in charge of a case of typhoid fever to notify the authorities within twenty-four hours, and it is the intention of the Board of Health to see that the Act is complied with in the future.

Canadian Nurses' Association.—The annual meeting of the Canadian Nurses' Association was held in Montreal recently. The reports for the year of the Registrar, Secretary and Treasurer, were most encouraging. During the year the association had 1,136 registrations and arranged for 1,090 cases. The past has been the largest year's work since the inception of the association in 1895, and it now numbers 200 members. A course of six lectures are arranged for each season given by leading medical men of Montreal.

GENERAL.

Lecture to Panama Natives on the Prevention of Malaria.—Dr. Roland Ross, a retired surgeon of the British Army, who has spent a week in Panama studying the general sanitary conditions, delivered an interesting lecture at Ancon Hospital, in the canal zone, on the mosquito theory regarding malarial fever. He impressed upon his audience the fact that malaria is practically preventable, as was proved in Suez and Cuba, if the general public and the authorities cooperate effectively.

Diphtheria in Trenton.—There is an epidemic of diphtheria in Trenton, N. J., and the health authorities say it will be difficult to check it because of their stock of impure or inert antitoxin. An effort was made last winter to pass an act to establish a State laboratory for the manufacture of pure antitoxin of the standard quality and strength. It was defeated because a couple of bills got mixed up in the not very clear minds of the legislators, and the law that was finally put upon the statute book provides that any Board of Health may contract with some responsible manufacturer to supply antitoxin, free of charge, upon the certificate of an attending physician, to such indigent patients as may require it. From the reported conditions in Trenton it may be judged that responsible manufacturers are not so easily found as might be imagined. It would be infinitely better to have the State supply good antitoxin in all quantities needed rather than have one or more cities stricken with diphtheria.

Government Needs Hospitals.—Surgeon General Rixey, chief of the Bureau of Medicine and Surgery of the Navy, has rendered his annual report to Secretary Morton, showing that the medical corps is in excellent and efficient condition, although the Surgeon General calls attention to the many difficulties under which it labors. It is stated that the future needs of the service will require hospitals at Charleston, S. C.; Guantanamo, Cuba, and Olongapo, P. I. The failure of the navy medical service to obtain good and ambitious surgeons is attributed in part to the fact that assistant surgeons receive fifteen per cent. less pay when on shore than do passed surgeons in the army. The naval hospital corps is reported to be in excellent condition, and it is recommended that it should be recruited to a strength of 1,000. It is also recommended that the number of pharmacists in the medical corps be increased to fifty. As was to be expected as a result of the President's orders muzzling those who might talk about estimates, none are given out for publication in detail in connection with this report. The estimates for medical services are, however, greater than last year.

Sensible Animal Philanthropy.—The late M. Léon Clery, for many years a prominent member of the Paris bar, made a will which shows that his well-known love of animals had a strictly practical side. He has left an annuity of £120 per annum for the master or mistress of a primary school in France or Algeria who best fulfils the conditions of a program which includes teaching children the difference between useful and harmful animals, instructing them to respect harmless snakes, toads, owls, etc., which old prejudices have caused to be the object of antipathy, and teaching children the utility of these animals. These prejudices, we regret to record, have too frequently been observed in the most zealous advocates of the Society for the Prevention of Cruelty to Animals, particularly in those specially drawn toward the antivivisection propaganda. The prize is to be awarded annually by a committee chosen from among the members of the Society for the Prevention of Cruelty to Animals. M. Cléry has also made several interesting bequests to the Paris museums; and at the end of his will he expresses a hope that the legacies in money will not be wasted by heavy legal expenses.

Military Surgeons' Congress.—At the concluding meeting of the International Congress of Military Surgeons held at St. Louis last week, officers were chosen for the coming year. Surgeon-General Walter Wyman of Washington, D. C., formerly first vice-president of the association, was chosen president; Major Albert H. Briggs of Buffalo, vice-president; Brig.-Gen. Robert M. O'Reilly, of Washington, D. C., of the United States Army, second vice-president; Major James Evelyn Milcher, of Carlisle, Pa., belonging to the United States Volunteer Service, secretary, and Major Herbert A. Arnold, of Ardmore, Pa., attached to the National Guard of Pennsylvania, treasurer. The winners of the Enno Sanders prize essay contest were announced. The first prize was awarded to Lieut.-Col. William Hill-Clime, of London, England, for the best paper on military surgery. The prize consisted of a lump of gold worth $100, on one side of which appeared the effigy of Enno Sanders of St. Louis, the giver, and on the reverse side the line, "For the best paper on military surgery." The second prize was awarded to Lieut.-Col. Hathaway, of the Royal Volunteer Medical Corps of Ihause, India. The prize was a life membership in the Association, estimated at $50. The meeting place next year will be Detroit, Mich.

The Canteen.—This subject will not down. So long as the Army officers are confronted by a condition and not a theory, the practical solution of the problems of drunkenness and of venereal diseases is to be found not in misty vaporings, but in sound common sense. Since Gen. Corbin's report showed that that very experienced and capable observer thought the time ripe for advocating the restoration of the army canteen, testimonies in the same direction are multiplying, writes the *Times*. The Judge Advocate-General of the army appends to his annual report the reports of two of his subordinates, the Judge Advocate of the Department of Colorado, and the Judge Advocate of the Department of Texas. Each of them emphasizes the evil effects upon the army of the abolition of the canteen, as promoting crime in the army, including the crime of desertion. The abolition, according to Col. Dunn, has resulted in multiplying "saloons and brothels," according to Col. Roberts, in multiplying "the saloons and dives that the virtual abolition of the canteen feature of the post exchange has made a universal feature of every military post." And Gen. Barry, the Commander of the Department of the Gulf, in his annual report, remarks: "It would add much to the discipline and contentment of the enlisted men at these outlying stations were the post exchange fully established, with the privilege of selling beer and light wines." The testimony of the officers of the army as to the evils of abolishing the canteen is virtually unanimous. It is they who have the greatest interest in the efficiency of the army, to which temperance is of course essential. They are the only expert witnesses. If one asks why, then, does not Congress authorize what all the experts agree to be so desirable, the only answer is that Congress goes in fear of a number of misguided persons who know nothing about the matter, and who have no right to an opinion upon it. If these people would kindly mind their own business, and refrain from trying to impose their ignorant views of the subject upon the lawmaking body, the canteen would be restored without opposition, save from those busybody women, of both sexes, who are afflicted with the mania to reform—someone else.

Panama Health Situation.—At the present time the health conditions are, relatively speaking, good. Panama is more healthful than other low coast places in the tropics hereabouts. The average number of deaths in Panama now is 100 a month. Last month 101 deaths were recorded, and the preceding month 97. Taking the population as 20,000, the ratio is easily arrived at. Sixty per cent. of the deaths occurred among the natives, the remaining 40 per cent. being divided among Europeans, North, Central and South Americans, and the other foreigners. The mortality among the North Americans was slight. Owing to the very unsanitary manner in which the natives live, especially the lower classes, it is remarkable that the death rate among them is not higher. Tuberculosis is a very common disease with them. Last month there was nineteen deaths from that disease alone, more than from any other disease. There have been a few cases of yellow fever this year, and there are at present two or three patients in the canal hospital, Italians, now on the road to recovery. Only one death from yellow fever among the Americans has occurred, the victim being Cunningham, an employee in the police service of the canal. The Americans in general have retained exceptionally good health, notwithstanding the fact that they have come down during the unhealthful season. Most energetic measures have been taken by the United States sanitary service to stamp out this disease, and while, owing to the close proximity of yellow fever districts, it may not be stamped out altogether, yet there is no doubt that it will be reduced to a minimum. Guayaquil, a well-known yellow fever hotbed, is only three days from Panama by steamer; hence, since the incubation period is fixed at a maximum of ten days, a person contracting the disease in Guayaquil can take passage for Panama and be in Panama a few days before the development of the disease. The sanitary officers are waging an incessant warfare on the mosquitoes, and are gradually getting all the canal buildings screened. Particular care is taken to screen all patients. Among the other diseases prevailing are to be enumeraed smallpox, leprosy, beriberi, diphtheria, malarial and pernicious fevers, and occasionally pneumonia. There are some cases of leprosy, particularly on the island of Taboga, about fourteen miles distant from Panama. The lepers run at large. Beriberi has been common among laborers, and in recent years it has numbered victims in the upper classes. The most common disease of all is malaria, and many people, including natives and foreigners, suffer from it. It is not amiss to state, however, that the malaria is in most cases contracted through an utter disregard of all precautionary measures, the vast majority not even taking the precaution to sleep under mosquito netting.

OBITUARY.

Dr. Frank Greenough, formerly one of Boston's most conspicuous physicians, died in Brookline, Mass., October 16. He was born in Boston sixty-seven years ago, and was graduated from Harvard in 1859, and afterward studied at several European medical universities.

Dr. William White, of Abingdon, Va., is dead in a hospital in Baltimore, where he underwent an operation. He was a brother of Judge John P. White, Chief Justice of the Supreme Court of Texas.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-first Annual Meeting, held at the Academy of Medicine, New York City, October 17, 18, 19 and 20, 1904.

FIRST DAY—TUESDAY, OCTOBER 18.

The President, William Harvey Thornton, M.D., of Buffalo, in the Chair.

Conservatism versus Early Intervention in Simple Dystocia.—Dr. William J. Meyer, of White Plains, N. Y., read this paper. He said that although much might be said concerning the unusual conditions which the obstetrician encounters, such as fetal monstrosities and abnormal conditions in the parturient woman, other than those to which he referred later on, he wished to emphasize the importance of active intervention in a certain class of cases which, too frequently, are neglected, although very frequently met with. These cases were those in which dystocia resulted from a lack of expelling force or from resistance encountered in the birth canal of an anatomically normal woman. There is generally an unwholesome fear of assisting labor. This, he said, was due largely to the fact that our predecessors had established a precedent from which we were loath to depart. The parturing woman cannot control the expelling force of her uterus, and often the life of the child is endangered by waiting too long for the descending head to dilate a rigid and undilated os. The obstetrician, having fully acquainted himself with conditions, should not fear to intervene to help in the dila-

tation of the undilated os. Dr. Meyer said that he knew of no physiological reason for not using the forceps early in very many cases, and that he had not found that the proper use of forceps had produced laceration. In 186 consecutive cases he had produced no laceration, and had no subinvolution nor post-partum hemorrhage He said that he had found the tent useless in producing dilatation of the rigid os and that the Barnes bag afforded little help, but that manual dilatation was always to be commended. This, he said, required considerable physical strength, but that, when the laws of labor were thoroughly understood and observed, the results justified this form of intervention and also the early use of forceps. He had followed this plan for five years, and he believed that he had not only saved the lives of many infants but had lessened the strain upon the strength of the mothers. He reviewed the histories of two cases as examples of this. In one of these, to which he had been called in consultation, the mother had been in violent fruitless labor for fourteen hours. Manual dilatation of the rigid os and the use of forceps had been forbidden when he first advised this procedure. At this time the infant was vigorous, the heart sounds being clearly distinguishable. Several hours later, when the labor pains had continued for fourteen hours in all, he had dilated the os and removed the dead infant with forceps. One year later he attended the same woman and found her os uteri contracted and the uterus vainly trying to expel its contents. At this time, however, being alone in charge of the case, he had dilated manually the os and had delivered a healthy living child. The second case was similar in that the os was rigid and uninfluenced by forcible labor pains, although these had occurred at fifteen-minute intervals for two hours. After twenty minutes' manual dilatation he had delivered the child alive, although a previous similar condition had resulted in a stillbirth. In conclusion, Dr. Meyer said that stupid conservatism was the cause of many deaths, and that if manual dilatation and the early use of forceps were more frequently resorted to, the fear of maternity, so common among women, would be greatly lessened.

Manual Dilatation.—Dr. E. D. Ferguson, of Troy, N. Y., said, in the discussion which followed that he fully agreed in the use of manual dilatation, and that no one could judge accurately the amount of force applied to the os when instruments were used for this purpose. Manual dilatation, on the other hand, was always subject to the exercise of judgment. The reason for applying artificial dilatation was to be found in the attempt to equalize the extensive forces and the resisting forces. But keen judgment should be used, he said, and it should not be forgotten that meddlesome midwifery is bad midwifery. He further emphasized the value of manual intervention as compared with instrumentation, by referring to those cases in which embryotomy becomes necessary. The embryotome is a dangerous instrument, and might do serious injury in the uterine cavity, while the use of the hand of the obstetrician is always a safe method of emptying the uterus.

Dr. Bernard Cohen, of Buffalo, said that one advantage of using the fingers to dilate a rigid os is that the cause of the rigidity was often distinguishable. Another was that the membranes may be preserved, which is not always possible when other measures were employed. The fingers, having partly dilated the os, may often be withdrawn, for they act as a stimulus to the uterus when that organ is not contracting vigorously. This was particularly true when quinine and morphine had been administered. Dr. Cohen said, however, that he did not consider it wise to interfere before about six hours had elapsed, thus differing from Dr. Meyers. In the use of forceps he preferred to use axis traction to the use of the long forceps more commonly employed. He further said that the exact time at which to use forceps was a nice point, that there was what he termed an "*obstetrical moment*" when they should be applied. In regard to lacerations, he said that he had averaged during an experience of over twenty-five hundred cases covering eight years, one tear in every seven cases, and that of these the proportion of cervical lacerations had been one in five, although he had had one hundred cases recently in which no laceration had occurred.

Complete Dilatation Before Applying the Forceps.—Dr. J. B. Cook said that the obstetrician must be more than a midwife. He must not wait for forty-eight hours, but must assist the laboring mother. He advocated complete dilatation before applying the forceps, or at least the force must be applied until the muscles surrounding the os were paralyzed. This should always be done under either complete anesthesia or without any anesthetization, as partial anesthesia is dangerous under these conditions. It is more dangerous, he said, to wait too long before applying the forceps than to apply them too early, and that the exhausted muscle does not heal readily, after a laceration and, further, that the forceps should be left on until the head is fully delivered, because it it becomes necessary to reapply them a tear almost always follows.

Asthma and Its Relation to Environments.—Dr. George N. Jack, of Buffalo, N. Y., read this paper. He said that asthma is not a disease, but is a symptom. It is, he said, a part of a vicious cycle; an abnormal biochemical and complex pathological process. It originates usually in the intestinal canal through a long-standing indigestion, and toxemia with faulty absorption and metabolism. This produces a toxic or lymphogenous chyle that generates an unstable blood, characterized by its extremely varied numerous and alarming paroxysmal morphological changes. These often alternate between lymphocytosis, an intestinal toxemic leucocytosis or anematosis, accompanied anatomically by a hyperplasia of the lymphatic and glandular structures and clinically by a most agonizing dyspnea. The nerve muscle spasm theory, he said, is now exploded. The anatomical structure of the air tubes disproves this, as they are composed of bone-like rings so constructed that no muscle contained in them could spasmodically contract in any way to interfere with ingress or egress of air. This is true of all the respiratory tract except the vocal muscles, and these never do except in laryngismus stridulus. Asthma, he said, is not a phantom disease produced instantaneously by smells, etc., but is a well-defined pathological process that has been gradually developing for months, years or generations. The asthmatic patient is always loaded for an attack. Lymphocytic and toxic leucocytic asthmatics with their unstable and rapidly disintegrating blood, their enlarged mucous glands and their relaxed blood and lymph capillaries in one class and the anemic asthmatic and his impoverished blood in the other, produce a variety of conditions that individualize each asthmatic and render him susceptible to a certain environment. Some environments explode this pathologically-charged machine into an asthmatic manifestation or encourage it when already exploded; other environments retard the explosion or quell it when it is already in action. As a simple example of this, he called attention to the common occurrence in the histories of all asthmatics, namely, when a bad day may be followed by a comfortable one, this being due to atmospheric conditions frequently. Dust, he further said, acts in causing an asthmatic attack by irritating en-

larged glands, but it is of minor importance, as it is only an aggravator and not a cause. Concerning seasonal changes, he said, that the fact that winter attacks were as frequent as those of other seasons and that his, as well as the occasional occurrence of an attack occurring in midocean, argued against the pollen theory. The fact that, in the asthmatic, the air tubes are the dumping ground of the toxic blood, is the factor in determining the location of the symptoms of the general diseased condition. In the treatment of asthma, Dr. Jack placed out-or-door life, in a high altitude, free from excess of moisture, and having an abundance of sunshine, as of first importance. This, however, should be in connection with attention to improvement in the intestinal disturbances.

An Old Specialty.—This was the title of a paper read by Dr. Jane Lincoln Greely, of Jamestown, N. Y., in which she painted a beautiful word picture of the life of the family physician. As the lymph, a carrier of all that is best for the living cell of the body, is to the animal organism, so is the family medical adviser to the community in which he labors. The special investigator and specialist is necessary for the advancement of the science of medicin, but the general family doctor also has his special field in the application of the results of original investigations. In doing this he wields unusual influence and in his supervision of the families in his charge he is not only the curer of disease but the far-seeing director of the lives, and by his guidance and instruction the general mental and moral as well as physical condition of the members of his community may be greatly influenced. Knowledge, wisdom, conscientiousness, unselfishness, character, must be his.

An Atypical Case of Appendicitis.—Dr. W. B. Reid, of Rome, N. Y., reported this case and said that in searching the writings of Deaver, Fowler, Mynter and Ochsner, he had found no mention of a condition similar to this case and that this stamped it as a rare case. A woman aged forty-nine years, married, had borne one child. Her general health had been very good except chronic indigestion and occasional swelling of the ankles. She had been thrown from a sleigh and fell upon her shoulder. This had been followed by pain in the left hypochondrium and later in the right lumbar region, the abdomen had been disturbed and there was some soreness at McBurney"s point. Later there had been board-like rigidity of the abdominal muscles. The diagnosis had been traumatic appendicitis. In consequence of patient's having glycosuria and albumenuria, she was not operated upon but was put upon starvation treatment. The temperature varied from 102° to 103° F. There was never any pain, although there was swelling the size of an apple in the right iliac region. Later, under local anesthesia an incision was made into the swelling, when a large amount of foul-smelling gas was liberated which caused Dr. Reid to suppose that he had perforated an intestine. When, however, he found pus at the bottom of the abscess cavity and the gangrenous stump of the appendix he concluded that he had a gas-producing infection. The question then arose: What micro-organism was present? He said that the reputation of the colon bacillus for marked variation, both in morphological appearance and biological characteristics, was well known but that the possibilities of an infection by the *Bacillus lactis aerogenes* was one which he had considered. Cultures made from the pus had in general resembled those of the colon bacillus. In summing up, Dr. Reid said: (1) The case was one of long standing appendicitis, as shown by the history of pain in the side and digestive disturbances. (2) The history of traumatism was purely a coincidence. (3) The acute attack was caused by an infection of the *Bacillus coli communis* and followed by abscess formation. (4) The acute nephritis was caused by an infectious toxemia, as a postoperative examination of the urine proved the urine to be free from albumin and casts. (5) Associated diabetic condition which, on examination of the urine showed to still have continued months afterward, furnished a sufficient amount of sugar in the culture media contained in the abscess cavity for the production of gas formation. The question then followed: Was there a double infection of the *Bacillus coli communis* and *Bacillus lactis aerogenes;* or was the infection a single one of the colon bacillus which, under peculiar conditions of diabetic culture media, produced one of the involution forms which resulted in gas formation?

Neophroptosis. Its Gynecological Importance.—This paper was read by Dr. A. H. Goelet, of New York, who said that the prolapse of the kidney has an important bearing upon gynecological conditions and that it is often overlooked as an etiological factor, both in producing and in maintaining congestion of the pelvic organs and diseased conditions coincident thereto, and in producing symptoms which are referred erroneously to the pelvic organs. This he had frequently observed in cases coming to him from other gynecologists. He pointed out that the kidney, when prolapsed, overlaps the ovarian vein, as it ascends along the spine, and compresses this vein, thus obstructing the return circulation from the pelvis when the waist is constricted by corset or clothing. It is not necessary, he said, that the constriction at the waist should be more than sufficient to support the clothing for the intestinal distention always associated with this condition is an important factor in forcing the kidney back against the spine. It might seem that, the kidney being movable, would escape such compression but the colon being attached to the kidney drags upon it when it is distended and holds it in position at the waist line, favorable for compression. The distended bowel must necessarily become displaced below the waist line since there is no room for it above. He said, also, that even in the early stages of prolapse, the kidney may retard the circulation of the ovarian vein, because, when the kidney descends, its lower pole swings inward toward the spine overlapping the vein. Compression and consequent obstruction of circulation of the ovarian vein may be brought about in another manner by a prolapsed kidney. The vein being in front and the ureter behind, where they cross, when the kidney descends the ureter becomes bent upon and drags on the vein. Distention of the ureter from accumulation of urine in consequence of obstruction at the point of flexure will also cause pressure on the ovarian vein. From these statements, he said that it would be seen that prolapse of the kidney is an important element in maintaining congestion of the pelvic organs and is to be regarded as a factor and a very important one in causing diseased conditions arising therefrom. He said, further, that it is certainly true that in most women having prolapse of the kidney there is some associated pelvic disease. The position of the kid-

ney may not always be the sole cause, but he considered it an important etiological factor in these conditions and when it is so, a cure is not possible without fixation of the kidney. This, he said, had been so frequently demonstrated that he was convinced that a prolapsed kidney has a strong influence in causing and maintaining such conditions as persistent leucorrhea, endometritis, uterine hemorrhage, uterine displacements and even ovaritis and salpingitis and hemorrhages into the pelvis, irritable bladder and cystitis. Gynecologists, Dr. Goelet said, should make a special point of recognizing this condition or excluding it in making diagnoses. This should be a matter of routine, to examine all patients for this purpose, not once but repeatedly, if necessary, until they shall be convinced of its presence or absence. Repeated examinations are necessary, he said, because the colon, when distended, is interposed between the kidney and the abdominal wall, acting like an air cushion, making it impossible to distinguish the kidney; therefore, distention of the colon must be dispelled before a satisfactory palpation may be made. The frequency of prolapse of the kidney is another reason for making this examination. In view of the fact that the kidney is an excretory organ and with knowledge that its function is seriously impaired by its prolapsed position, that it is so often disregarded, is a matter of surprise to the surgeon who constantly has opportunities to see good results from the operation for fixation of the prolapsed kidney. It is quite true, he said, that many patients exist for years with kidneys out of place, but they are chronic invalids and their kidneys are diseased, for a prolapsed kidney invariably becomes diseased eventually and chronic inflammation results in the pelvic organs when the return circulation is interfered with. He said that seventy-five per cent. of all patients with prolapsed kidneys have evidences of inflammation in three years, and that if others could see these kidneys as the surgeon does on the operating table, there would be less hesitancy in advising operation for correction and that the operation would be more often successful in affording relief as it might be done more frequently before the kidney had become incurably diseased. He said, in conclusion, that he had performed one hundred and ninety-seven consecutive nephropexies in forty-seven of which he had fixed both kidneys, and had had no deaths. Hence it could not be said to have any mortality rate.

Transillumination of the Stomach.—Dr. Robert Coleman Kemp reviewed the history of this method of diagnosis in diseased conditions in the stomach giving credit to Max Einhorn for first applying it to the living subject. He exhibited Einhorn's instrument and the one devised by Lockwood for this purpose and pointed out the disadvantages of both. He had improved upon the Lockwood instrument by adding to it an accessory cable, by means of which the electric bulb might be drawn up to any part of the stomach which had not been possible with the device as originally used. He had used, in a large series of cases three fluorescent media: (1) Quinine bisulphate, ten grains in a pint of water; (2) esculin; (3) fluorescin and sodium bicarbonate and fluorescin and lime water. The quinine solution became fluorescent only upon the addition of sulphuric acid. No deleterious results had occurred in his cases. He emphasized the importance of studying the motor function of the stomach in connection with transillumination and said that these two procedures offered a more certain means of diagnosis in gastric dilatation, gastroptosis and tumors in the wall of the stomach than any other method. He said further that his experience had shown him that the normal stomach may vary greatly in capacity; in some individuals eight ounces being the normal capacity, while in others two quarts might be contained. As long as the motor and other functions are normal, the abnormal size of the stomach did not render it pathological. When the lesser curvature is in its normal relation to the diaphragm, the lower curve is at the umbilicus and the motor function is insufficient, there is a condition of dilatation. He demonstrated a method for supporting the dilated stomach, using for this purpose a wide strip of adhesive plaster, cut so that when applied, a straight edge extended across the abdomen at the level of the umbilicus, while the lower edge was so cut that an obtuse angle was directly in the middle of the front of the abdomen. This bandage was applied and was then reenforced by two additional strips applied over the first strip and extending around each side. This, he said, was not only a cheaper but a better method of support than the prepared abdominal belts of the dealers. He said, in closing, that, in attempting to outline the stomach by means of distention with air, the intestine was frequently distended also and that it might ride up over the lesser curvature of the stomach and thus disguise the real condition present. This was a difficulty which was of course not met with in the use of transillumination with fluorescent media and the modified Lockwood transilluminator.

A Substitute for Rubber Gloves.—Dr. Frederick H. Wiggin said that in consequence of the frequency of perforation of the rubber glove used by surgeons, a substitute was desirable, and he offered the following as a very satisfactory substitute:

℞ Ether ..... ℥ xlix
Alcohol (96 per cent.) ..... ℥ xlix
Celloidin ..... ℥ i
Castor oil ..... ℥ ss

This, he said, when applied to the hands soon hardened and furnished protection equal to that of rubber gloves, was flexible and was not easily injured. It was, he said, not soluble in water or ordinary alcohol, but that it could be easily removed by strong alcohol and ether, equal parts. Moreover, it was cheaper than rubber gloves.

Salivary Calculi.—Dr. Herman Jarecky, of New York, said that Foster had reported one hundred and six cases of calculi in the salivary glands and ducts, and that forty-seven cases had been reported by other writers, but that while most of these cases had been those in which calculi had been found in Wharton's duct, and some had been cases found in Blandin's ducts, there was no record of a case in which calculi had been found in both of these ducts in the same patient. He reported three cases and exhibited the calculi which he had removed. In one of these cases he had removed stones from both Wharton's duct and Blandin's ducts. The stones, he said, were usually formed upon some nucleus of foreign matter, as toothpick ends or particles of food, and consisted of calcium carbonate or calcium phosphate. They had been removed by the use of local anesthesia, using simultaneously adrenalin, thus making a painless and bloodless operation. The calculi from Wharton's ducts were pear-shaped and those from Blandin's ducts were rod-shaped. He called attention to the importance of considering the possibility of a

salivary calculus in every case in which there was swelling in the submaxillary region. One of his cases had been diagnosed malignant disease, and had been treated accordingly by the X-rays.

Radical Operation for Carcinoma of the Breast.—Dr. Willy Meyer, of New York, described the technic of this operation, as he has developed it. The main points in which it differs from the usual procedure, as proposed by Halstead, are the dissection of the diseased tissues from the clavicle and axilla downward and inward in the direction of the branching of the great vessels, thus making it possible to ligate the main vessels early during the course of the operation; the severing of the tendon of the pectoralis major muscle at the beginning; and the retention of the pectoralis minor muscle, to which the lower skin flap is stitched later. Dr. Meyer said that it has been proved that the pectoralis minor muscle is never involved in the carcinomatous process, therefore it is not necessary to remove it and that it helps, moreover, to fill in the inevitable gap left after removal of the breast. He said, further, that during his ten years' experience with this operation he had had only two deaths, and that neither of these had been due to the operation directly.

Prolonged Fasting in the Treatment of Acute Diseases.—Dr. Norton Jerome Sands, of Port Chester, N. Y., read this paper. He said that during the course of acute diseases the digestive powers are in abeyance in proportion to the severity of the disease and that too frequently the patient is overfed. This, he said, aggravated the condition of the patient by setting up intestinal indigestion with resulting toxemia. During tewnty-one years he has gone to the other extreme by withholding all food during the active stages of the acute diseases, giving only water. He reviewed his treatment of typhoid fever, saying that he withheld all food for twenty-one days, and, after thoroughly cleaning out of the bowel, he gave two quarts of water a day. His experience had shown him that there was no tympanites and no diarrhea, and that the temperature was usualy two or three degress lower than is common in typhoid. He had also found that the cold sponge was not necessary after the first week. After the third week he resumes liquid food, and he further said that contrary to the usual expectation the patient was not weakened by his prolonged fast, and that he even does not seem to be as weak as the patient who is fed in the customary way in typhoid. All other acute intestinal diseases he has treated similarly. Food, he said, is imperfectly digested during the course of all acute intestintal diseases, and that, therefore, feeding is irrational; it only adds to the gastrointestinal disturbance.

Dr. Wiggin, in the discussion, said that he had found that sepsis was a condition in which it was not advisable to feed the patient, and that he thought fasting was valuable in such conditions.

The Acetone Bodies in Diabetes.—Dr. Heinrich Stern, of New York, read a paper on this subject. He said that the problem present was how to cope with the acetonuria without aggravating the diabetes. In diabetes acetone substances are invariably expressive of a state of undernutrition. This may be, he said, occasioned by the one-sided diet which, of necessity, must be pursued in grave cases of diabetes. It will ensue, however, although probably somewhat later when the regimen exhibits abundant albuminous substances and immoderate amounts of carbohydrates. He dismissed the plan of giving oatmeal and butter as not only productive of discontent in the patient, but as not furnishing the required food substances, and advocated the abandonment of every other food and the administering of the yolks of hen's eggs. The rationale of the *yolk cure*, he summed up as follows: (1) Palmitin, stearin and olein the fat substances of the yolk, occasion but small amounts of acetone bodies in the combination in which these fats exist in the yolk, they yield no butyric acid, or hardly any. (2) The large amount of lecithin supplied to the organism by the yolk tends to the restoration of the nerve forces and the amelioration of the cachectic condition. (3) The occurrence in the yolk of a diastatic ferment, assisting in the conversion of amyloid substances introduced by proteids and allowed vegetables. (4) Digestive secretion stimulating function of the yolk. From ten to forty yolks a day, and occasionally a small amount of proteid and non-avoidable carbohydrates, such as green vegetables, may be given, he said. He presented a case illustrating the benefit derived from this treatment, a boy in whom a previous acetonuria and glycosuria had entirely disappeared and who had gained considerably in weight.

Ocular Reflexes—their Influence on the General Health.—Dr. S. W. S. Toms, of Nyack, N. Y., said that conditions resulting from reflex irritation due to eye-strain, were often treated in vain by the general practitioner, and that the patient as a last resort went to the quack for relief. Slight astigmatism, he said, may produce hysterical or even more profound nervous conditions. The symptoms are frequently legion, but that headache, nausea, vertigo, symptomatic cardiac affection, night terrors or local conditions in the eye, such as hordeolum and conjunctivitis, were common. No accurate correction of abnormal conditions may be made without the use of a mydriatic, and he cited numerous cases in which serious general conditions had been removed by the correction of faulty eye conditions. One case of unusual interest was that of a spasmodic tic simulating chorea which had been removed by the correction of an exophoria.

An Epidemic of Mild Smallpox.—Dr. Edward Munson, of Medina, N. Y., reviewed an outbreak of what had been diagnosed at first as chickenpox, but which had been proved later to be true smallpox. Many of the cases were so slight that the patients had not even been confined to their houses. In connection with this he proposed, as a posible cause of the mildness of the disease, inherited immunity due to long-continued vaccination among the ancestors of the patients together with the modern hygienic conditions.

(To be Continued.)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirtieth Annual Meeting, held at Cincinnati, Ohio, October 11, 12 and 13, 1904.

The President, Hugh T. Patrick, M.D., of Chicago, in the Chair.

Prayer was offered by Rev. Chas. Frederick Goss, after which the Mayor of Cincinnati delivered an Address of Welcome, which was responded to by Dr. Dudley S. Reynolds, of Louisville.

The Scientific work was divided into two sections, Medical and Surgical.

PROCEEDINGS OF MEDICAL SECTION.

What Shall be Done with the Criminal Insane?—Dr. John Punton, of Kansas City, Mo., in a paper with this title, said that the conflict of authorities raging between law and medicine was responsible for much miscarriage of justice. A mutual conference to adjust differences of opinion and formulate conclusions relative to the medicolegal aspects of insanity in keeping with the more advanced state of medical knowledge, which

could be used as a criterion in courts of law, was greatly to be desired. The skilful manipulation of law, as now applied, often swept aside the entire medical aspect, even when guilt was admitted, and gross errors of justice resulted. The members of the American Psychological Association and the general medical profession were appealed to for their assistance in defining the mental condition which should exonerate a criminal from punishment. The wide difference of opinions prevalent in the public and professional minds relative to what constituted criminal responsibility of the insane rendered a concensus of medical opinion a necessity. Very few of the insane were wholly irresponsible for their misdeeds, and they should, therefore, incur, with certain restrictions, some form of punishment. In view of the degrees of responsibility associated with insanity, the just and equal disposition of the criminal insane became a question of the highest importance. The prevalent horror and disgust at the punishment of an insane person for criminal misconduct was a fallacy which should be condemned, as it often proved to be the responsible agent for the plea of immunity from punishment by murderers on the ground of insanity. The declaration of the law that the insane man was wholly irresponsible was a gross confession of weakness. Some courts recognized modified responsibility and instructed the jury to commit the insane criminal, if found guilty, to the State Insane Hospital until his recovery, when he shall again be set free, and this usually happened a very short time after punishment. The just or humane medical disposition of the criminally insane would seem to demand his incarceration in a special institution under medical surveillance and subject to certain restrictions suited to each case, and he should never be allowed to associate with innocent inmates of the State Hospital. A concensus of medical opinion on the vital important question above stated would tend to harmonize the present misunderstanding between law and medicine, and would thus aid in a more just and equitable disposition of the criminal insane.

Dr. A. Ravogli, of Cincinnati, in the discussion, deprecated the tendency to generalize too much in discussing the criminal insane. He reported a case in which an epileptic committed several murders before his insanity was recognized.

Dr. Charles W. Hitchcock, of Detroit, said this was a very delicate question for the medical profession to decide, and a case was reported, showing that justice might miscarry, even where there was an institution provided for the incarceration of those not responsible under the law.

Dr. G. Frank Lydston, of Chicago, disagreed with the previous speaker that this was a delicate question for the medical profession, and said that the entire subject of criminology should be relegated to the medical profession, so far as the physical conditions and remedies therefor were concerned. Many irresponsible individuals were punished. Punishment for crime had proven a distinct failure. Both sane and the insane criminals should be removed from our social system and isolated. The principal should be not punishment, but simply social self-defense. What should we do in regard to the propagation of the criminal insane? We had not yet come to the sterilization of these individuals, but undoubtedly would do so.

Dr. F. W. Langdon, of Cincinnati, said that, if the profession was given full power in this matter, it was questionable whether it would be able to draw the lines satisfactorily. The legal and medical professions had different points of view, and therefore their conclusions must vary. He agreed with Lydston as to the punishment of the sane and insane. The physician should not arrogate to himself the fixing of the penalty that probably was never right.

Dr. B. F. Beebe, of Cincinnati, stated that the law had been coming to medicine on this question, because the prosecutors had been securing the assistance of medical men. Society must be protected, but the question was how and when and where to take care of the criminal insane. We must determine what constitutes responsibility or irresponsibility. While the laws of the various States did not agree, there was practical unanimity among those who had studied this subject from a medical standpoint.

Dr. Dudley S. Reynolds, of Louisville, spoke of the qualifications of the jury, requiring that they be not familiar with the facts and were not opposed to capital punishment. Such qualifications did not require that the jury be really competent to decide cases, and medical men were called in to testify as to the responsibility or irresponsibility of the defendant. Medical testimony was based not on an examination of the individual, as a rule, but upon hypothetical questions constructed by the legal gentlemen. The chief trouble was with the legislative conditions in the various States. Any person convicted of a felony should be unsexed rather than killed. No person in his right mind would commit a felony.

Dr. Sprague referred to the fact that the use of the asylum for the criminal insane was being rapidly extended throughout the country by the legal and medical professions. Often the attorneys for the prosecution and defense agreed to rest the matter of commitment or trial with the medical commission of such an institution. Such a reference would be more frequent if there were more assurance that such a medical commission was composed of really expert medical men.

Dr. Hitchcock, in explanation, stated that he did not regard this an indelicate question for physicians, but it was a very delicate question.

Dr. Lydston, in answer to a question, stated that sterilization could be effected by obliteration of the Fallopian tubes in the female, and by obliteration of the vas deferens in the male, without any effect upon the individual, save the arrest of the function of procreation.

Dr. Punton, in closing, said it was desirable to become able to have the court properly instruct the jury in these cases.

Loss of Consciousness and Automatism in Inebriety.—Dr. Thomas D. Crothers, of Hartford, Conn., said that the claims of no recollection or consciousness of events by inebriates indicated a paralysis of certain brain sections during which the victim might act automatically and be without consciousness of the real conditions. Histories of prominent cases confirmed this fact. Many startling crimes were committed in this condition. This was a new phase of irresponsibility which had not been recognized by the courts and only recently had been studied by physicians. The defense of no recollection might be a reality in some cases, and should be recognized by physicians.

Dr. B. F. Beebe, in the discussion, stated that the essential point was to prove the fact of the unconsciousness and the automatism. An idea could not exist if the brain cell was not in a condition to receive and retain an image. Whether unconsciousness was produced by alcohol or any other poison, the result was the same.

Dr. John Punton said that the medical profession ought to know the effects of alcohol upon the nerve

cells, but when this question came up in court there were as many opinions as there were doctors. It was not the individual's opinion the court asked for, but rather what definite knowledge there was and the consensus of opinion of the medical profession in reference to the question at issue.

Dr. Hugh T. Patrick said it was necessary to make a very fine distinction between alcoholic automatism and automatism in the alcoholic. In many degenerates or imperfects, there was a tendency to drink too much. The automatism and the drinking might be the result of a preexisting condition.

Dr. Crothers, in closing, stated his belief that individuals, such as he had described, should be regarded as insane.

General Streptococcus Infection of Intestinal Origin with Report of a Fatal Case.—Dr. G. W. McCaskey, of Fort Wayne, Ind., read a paper on this subject, in which he said that there were constantly in the respiratory, genito-urinary and digestive tracts large numbers of pathogenic germs, which might exist in any one of three states: (1) Actively virulent; (2) innocuous, but with conservation of virulence; (3) as a pure saprophyte. These pathogenic germs, which included streptococci, straphylococci, the colon bacillus, and many others might be transformed from the saprophytic to the virulent state by local or general morbid condition. In the case reported, a girl, aged twenty years, a severe chilling of the surface led to a general infection by the *Streptococcus pyogenes*, which apparently had its origin from the intestinal contents which were almost a pure culture of this organism. No other possible source of infection could be determined. The author drew the following conclusions: (1) The digestive tract frequently contains the *Streptococcus pyogenes* and other pyogenic or otherwise highly pathogenic organisms either in an actively virulent or asprophytic state. (2) These organisms under certain favorable conditions might become enormously prolific with reestablishment or great increase of virulence. (3) Under such conditions the various toxins which these organisms produced are absorbed more or less freely from the intestinal tract, producing a more or less severe toxemia which disappears upon removal of the cause. (4) With local morbid alterations in the intestinal mucosa, these organisms may pass the intestinal wall in sufficient numbers and with sufficient virulence to produce a general infection of a serious or even fatal type. (5) The same result may follow functional disturbances caused by errors of diet, etc., leading to blood stasis and increased diapadesis.

Hereditary Predisposition in Tuberculosis.—Dr. Charles L. Mix, of Chicago, said that hereditary predisposition was usually defined as a specific predisposition toward tuberculosis. The nature of such predisposition was purely speculative. It was really a relic of the humoral pathologists, and existed today because of the difficulty of demonstrating actual infection. The argument in favor of hereditary predisposition was as follows: Tubercle bacilli were ubiquitous; every one was constantly breathing them in. Half of the people became tuberculous; half escaped. Half were, therefore, predisposed, and half were immunes. The major premise was false, as shown by a table illustrating the number of individuals to each consumptive. The table explained the maximum incidence of tuberculosis at the ages of from twenty to thirty-five years. There were many fallacies in the usual statistics tending to support the theory of hereditary predisposition. The reports of the numerous joint investigation committees proved nothing. The interpretation of the family cases of tuberculosis was often faulty; family cases showed infection just as much as hereditary predisposition. Hereditary predisposition implied hereditary immunity, but the latter apparently had no existence. The conclusion was reached that there was no such thing as specific hereditary predisposition.

Dr. G. W. McCaskey, in the discussion, agreed with the author that there was no such thing as a specific hereditary predisposition to tuberculosis. The important thing to remember was that tuberculosis was always an infection, and that no one could ever contract the disease unless infected. There was little doubt that every one living in a civilized community inhaled tubercle bacilli at one time or another, and with more or less frequency, the inoculations proving effective or otherwise, according to the local and constitutional states of the individual.

Dr. A. P. Buchman, of Fort Wayne, said that one did not invariably become tuberculous upon exposure to the tubercle bacillus; otherwise every one would be tuberculous. Often tubercle bacilli might be found in the absence of manifest tubercule infection.

Dr. Mix, in closing, said acquired predisposition existed, and the individual might also inherit a predisposition, not only to tuberculosis, but to any of the infections. There was no specific predisposition to tuberculosis, nor any other infection.

Treatment of Tuberculous Pleuritis.—Dr. James A. Burroughs, Asheville, N. C., referred to the use of intrapleural injections of nitrogen gas, and reported some cases in which he injected the pleural cavity with salt solution for the control of pulmonary hemorrhage in tuberculosis.

Dr. N. McKitterick, Burlington, Iowa, in the discussion, said that injections into the pleural cavity in the presence of diseased lungs and pleura, to compress the lung, was positively dangerous. The method did not merit much consideration in the statistics given by the essayist.

Dr. Carl Von Ruck, of Asheville, agreed with the previous speaker as to the dangers of pleural injection. In tuberculosis of the lungs, the cavities tended to work toward the pleural surface of the lung. To prevent rupture, nature caused a thickening of the pleural surface of the lung at that point. The injection of air or fluid into the pleural cavity to bring about the control of pulmonary hemorrhage through pressure required the breaking-up of the adhesions which nature had formed, in order to accomplish compression of the lung.

Dr. Burroughs, in closing, declared that the matter was still in an experimental stage.

The Obstetrical Significance of the Transverse Diameter of the Pelvis.—Dr. Joseph B. DeLee, Chicago, in a paper with this title enumerated the various kinds of pelves, aside from spondylolisthetic and kyphotic pelves, in which there was a diminished transverse diameter. These were especially the funnel-shaped, the assimilation, the masculine and the infantile pelves. Various methods had been employed in making the diagnosis of lessened transverse diameter of the pelvis. The essayist presented an instrument for measuring the diameter of the pelvis. He believed the transverse diameter was not

infrequently reduced. In such cases there was frequently difficulty in delivery, especially in the passage of the shoulders and the extraction of the aftercoming head. In treatment, the expectant method should not be tried too long. Frequently the forceps sufficed to effect delivery. Not infrequently symphyseotomy might be indicated. In breech cases delivery might often be facilitated by the application of forceps to the aftercoming head. Illustrative cases were reported.

Dr. Henry F. Lewis, of Chicago, said the contraction of the transverse diameter of the pelvic outlet was probably more frequent than was generally supposed. In these cases one should not delay the use of the forceps, which should be applied early. In cases of infection in the male type of pelvis, when the head had well advanced, if the forceps failed, symphysectomy was often an ideal operation.

Dr. DeLee, in closing, stated that in a breech case one was formerly instructed to put the forceps in the pocket. In such cases, one would now put the forceps on to boil. As a matter of fact, the forceps would fit the aftercoming head better than when the head presented. The exaggerated lithotomy position was sometimes of value. He reported a case in which an assistant performed tracheotomy on the child in a breech case. The child lived.

Hydrotherapy in Nervous Diseases.—Dr. Charles W. Hitchcock, of Detroit, Mich., described the effects of hydriatic applications, and showed that water might be made a promoter of elimination and a stimulant to all the vegetative processes. Properly applied, it was a powerful tonic. It might be an excitant, but it was also the finest sedative at our command. The author presented the practical advantages of the use of water in the treatment of neural and psychical cases.

The Treatment of the Morphine Habit.—Dr. Curran Pope, of Louisville, Ky., in a paper with this title, pointed out the peculiar state of mind of these patients and the necessity of appreciating it. A sympathetic understanding of the needs would facilitate treatment. Too much importance could not be attached to the condition of the excretory organs. Preliminary examinations were imperative in each case. There should be thorough and complete elimination before commencing the reduction of the drug, after which reduction might be painlessly carried to a certain point, and all shock avoided. All this time help should be given, not as a substitute, but in the shape of a neurocardiovascular support. When the drug was entirely removed, a substitute should be used, not hyoscine. The value of the nonmedicinal treatment, such as massage, vibration, electricity, hydrotherapy, isolation and moral control, could not be overestimated in these cases. The value of after-treatment and the need of keeping in touch with the patients were a part of the system. Personality also entered a great deal into the question.

Dr. Frank P. Norbury, of Jacksonville, Ill., in the discussion, said he had not always had idealistic experience in the treatment of these cases. Recovery was not always smooth, and relapses were not infrequent. It was advisable to place these patients at rest in bed at once, and after perhaps two weeks the drug might be withdrawn. Often sodium bromide was useful as a substitute for the morphine, and cannabis indica was frequently of value as a stimulant. He reported a case in which the patient used heroin instead of morphine.

Dr. John Punton said the patient must be given to understand at the start that the physician should have his cooperation. The idiosyncrasies of patients to the drug differed, hence it was necessary to treat the patient. Hyoscine was a most valuable drug when properly used, but it was very dangerous when used promiscuously. The majority of physicians who came for treatment claimed they could not spend the time that was regarded as necessary to effect a cure.

Dr. Albert E. Sterne, of Indianapolis, agreed with the essayist in general, but did not think he laid sufficient stress on the reduction of the basis upon which the drug habit rested. One must take into account the fundamental nerve weakness. Even the physically strong might present nerve weakness. Habituation was not purely functional. There was a structural change in the nervous system, which supplied the physical basis for the condition. The use of drugs was to be deprecated. Many of the so-called abstinent symptoms were really not such symptoms. Often hyperacidity required treatment. Furthermore, every morphine habitué was a liar and absolutely untrustworthy concerning his condition.

Dr. T. B. Greenley, of Meadow Lawn, Ky., said that many morphine habitués were able to work and earn sufficient to pay for the drug consumed, and made barely a living, but could not afford to take proper treatment.

Dr. George P. Sprague, of Lexington, Ky., was surprised that the essayist did not begin at once the reduction of the drug, as there was every reason why it should be withdrawn immediately. The patient might be taken off the drug in from five to ten days, except in perhaps one case in twenty. Often the patient was sustained by a minute quantity of morphine. Some patients claimed that one-eighth of a grain was satisfactory, and the reduction to that point was not objected to by them. Often it was better not to stop the drug altogether until one had reached a decreased dosage of one-twentieth of a grain or less, until twenty-four hours could be passed without the drug, without unpleasant symptoms.

Dr. R. E. Haughton, of Richmond, Ind., regarded this condition as a practical toxemia affecting the cellular elements of the brain. After deciding upon the withdrawal of the drug, one must secure absolute control of the patient, in order to be successful in treatment. One must sustain the individual and at the same time secure elimination.

Dr. T. D. Crothers said a melancholic fact was the large percentage of the profession that were victims of morphine. The treatment employed must depend upon the individual. Psychotherapeutics and hydrotherapeutics were useful. Nerve rest was important. Drugs should be avoided.

Dr. Falk said that in prison practice he withdrew the drug from patients at once. The use of ergot, and the administration of elixir of chloral and bromide at night, he had found was not followed by any unpleasant results. None of the cases had been cured permanently.

Dr. B. F. Beebe said the removal of the drug in one week or ten days was too short. The patient should be built up as the drug was withdrawn. The medicine must be withdrawn; elimination should be as rapid as possible and the system built up.

Dr. Pope, in closing, insisted upon four to six weeks for the after treatment, because nutrition must be improved. Treatment during convalescence was

important. When the patient stopped treatment, he should be instructed to return at once if there were any unpleasant symptoms.

Effect of Direct and Indirect Violence Upon the Skull and Brain.—Dr. Albert E. Sterne, of Indianapolis, Ind., read a paper on this subject, in which he presented the following summary: "(1) Injuries of the skull and brain may be classed under two heads, those of impact, and those of momentum, either of which may be occasioned either directly or indirectly. (2) Injuries of impact, however extensive, offer a better immediate and remote prognosis, but must be treated with as little delay as possible, and almost always surgically. (3) Injuries of momentum show graver probabilities both in the immediate and remote effects. (4) In injuries of momentum lesions through *contrecoup* are more apt to occur, with extensive damage to brain structures and often without fracture of the skull, or external wound. (5) After trauma to the skull and brain, the immediate necessity is free drainage and avoidance of intracranial pressure. (6) The possibility of fracture should ever be kept in view after injuries to the head, and scalp wounds should, if necessary, be freely enlarged to determine the wisdom of further operative interference. (7) Progressive coma, after momentum injuries, is a strict indication for operation."

A Clinical Study of the Mental Disorders of Adolescence.—Dr. Frank P. Norbury, Jacksonville, Ill., discussed this subject under the following heads: (1) Adolescence presents a physiological study of contrasts revealed in (*a*) normal psychology of this period, (*b*) psychophyical symptomatology, and (*c*) pathological symptomatology. (2) Clinical groupings of symptoms leading to classification of the mental disorders of adolescence; dementia præcox, katatonia, hebephrenia, hysterical excitement, etc. (3) Clinical considerations of prognosis: (*a*) Evolution of mental disorders (*b*) recoveries, complete, partial; (*c*) terminal dementia. (4) Treatment: (*a*) prophylaxis; (*b*) immediate. (5) Conclusions: (*a*) The family physician must recognize early these important mental disorders; he must cooperate with the alienist in treatment; (*b*) prompt and energetic treatment is imperative; (*c*) prognosis should be guarded.

Insanity in Relation to Obstetrics and Gynecology.—Dr. Henry F. Lewis, of Chicago, contributed a paper with this title. He stated that various types of insanity might affect the pregnant or puerperal woman, or the woman suffering from pelvic disorder. There was no true puerperal insanity, however, as such. Normal pregnancy and even normal menstruation were not devoid of certain eccentricities of temper, tastes, appetites, or even morals. Some degree of mental instability must preexist if the eccentricities were to be exaggerated into insanity. The element of heredity was a potent factor, and could be traced in about three-fourths of the cases. Authorities differed as to the estimated frequency of obstetrical insanity. McLeod's figures gave a proportion of one case to 2,000 labors. Clouston found 10 per cent. of insane women at the Edinburgh Asylum were classified as having puerperal psychoses. Lane from observations in the Boston Insane Hospital for the past ten years concluded that insanity associated with childbirth occurred only half as often as insanity among all women of childbearing age. At best, one could only grant to childbearing an exciting causal relation in the production of an outbreak of insanity. The predisposing instability of mind, often largely hereditary, awaited some awakening impulse in an acute physical or psychical disturbance. Such disturbance might be furnished by disorders of the genital organs in the performance of their normal functions. The relation of disease of the female genital organs to mental disease had long been recognized, but the intimacy of sex relation had been the subject of wide differences of opinion. A very large number of insane women were affected with pelvic disease. Evidence from autopsies and gynecological examinations of insane women by a large number of authorities showed the presence of noticeable pelvic disease in about twenty-five per cent. A considerable number of gynecologists had operated upon insane women at asylums for their genital lesions, and had secured a gratifying percentage of cures and instances of improvement. Hobbs, of London, Ont., observed over a thousand insane women and found pelvic disease of sufficient moment to justify operation on account of the pelvic disease itself in 25 per cent. of these women. All his examinations were made under the influence of an anesthetic, and suggestion was thereby eliminated. Ovarian lesions seemed to influence the mental state the most, uterine next, and vaginal the least. Neoplasms were the least prone to cause mental disorder of all the pathological conditions. Judging not alone from the work of Hobbs, it appeared that there was a much larger proportion of pelvic disease among insane women than among sane; that the pelvic disease had at least an exciting causal relation to the mental disease; that successful treatment, operative or otherwise, of the pelvic lesions would promise good results in the treatment of the mental disease. It was pretty generally agreed that some pathological basis must exist to justify operation.

Newer Conceptions of the Management of Bright's Disease.—Dr. Alfred C. Croftan, of Chicago, Ill., considered this diseases as a cardio-vascular disorder of manifold origin, involving primarily the heart and arteries, secondarily those organs chiefly supplied by end arteries, namely, the brain, the retina, and the kidneys. The degeneration of the kidneys was, therefore, a very common and important, but not a determining feature of the disease. Bright's disease in early stages not infrequently occurred without renal involvement. Primary nephritis with the retention of excrementitious bodies might occasionally be a cause of the cardio-vascular changes. This sequence of events, however, was relatively rare. The management of Bright's disease should be directed towards the prevention or removal of factory operative to affect the heart and arteries. The treatment of the nephritis was incidental, but important. The rest cure of the kidneys, diet (dangers of exclusive milk feeding), hygiene and medicinal treatment were discussed on the basis of the above conceptions.

Early Recognition of Important Eye Lesions by the Practitioner.—Dr. George F. Suker, of Akron, Ohio, pointed out the early diagnostic eye lesions in diabetes, chronic nephritis, and locomotor ataxia. Reference was made to the diagnostic conjunctival spot in cases of measles. He spoke of the frequency in mistaking glaucoma for trifacial neuralgia; also the frequency with which simple, chronic glaucoma was confounded with cataract. He emphasized the need of recognizing the eye conditions as a factor in chorea, functional epilepsy, neurasthenia and hysteria. The relation between gastro-intestinal derangements and

certain eye lesions was pointed out, and the need of a thorough ophthalmic examination in the neurotic, chlorotic and patients of this character emphasized.

Value of the X-Ray to the General Practitioner.—Dr. James E. Coleman, of Canton, Ill., stated that, as the practice of medicine was still largely in the hands of the general practitioner, it made it necessary for him to improve to the greatest extent his resources for diagnosing and combatting disease. X-ray apparatus had become a necessary adjunct. In order that it might be satisfactory, it must be first-class. Every general practitioner should have one text-book on X-ray therapy. The mastery of the details and technic was not difficult when studied, but success depended upon a knowledge of anatomy and proper interpretation of the screen and skiagraph. Cases were cited.

Macular Atrophy of the Skin.—Dr. Edward H. Shields, of Cincinnati, said that this rare disease was first described by Jaddason, in 1892. No other case reported. The author presented the following history of a case: Eighteen months ago red macular lesions were found on the legs and thighs, with no subjective symptoms. Some weeks later the patches lost redness, became softer, depressed, and the skin over the diseased area become shriveled: atrophy continued for several weeks, when the atrophic spot became soft and pale. Owing to the marked irritability of the skin, the atropic lesions did not appear very pale immediately after the removal of the clothing, but after half an hour of absolute rest they became quite pale, resembling those of morphine. He stated that treatment was of little value, yet in due course of time the process was arrested.

Why So Many Errors in the Diagnosis of Graves's Disease?—Dr. J. H. Stealy, of Freeport, Ill., emphasized the importance of a correct nomenclature and its bearing on errors of diagnosis. He pointed out the illogical nature of the term exophthalmic goiter as applied to the symptom-complex of Graves's disease, and showed what a remarkably large number of cases of Graves's disease could be found if sought for. He discussed the percentage of symptoms, the diagnostic importance of each, and also the symptomatology.

Echinachea.—Dr. C. S. Chamberlin, of Cincinnati, made a plea for the recognition of echinacea as a valuable therapeutic agent. He gave a brief history and description of the drug, and referred to the suspicion with which the regular profession regarded remedies introduced by irregular practitioners, and their reluctance to investigate their merits. He cited brief reports of case illustrating the therapeutic value of the drug as an alterative and antiseptic, and its range of application.

The following papers were also read: Pseudo-membranous Croup, by Dr. R. E. Carlton, of Latonia, Ky.; Bacteriology and Immunity, What It Is, What It Teaches, What It Does Not Teach, by Dr. R. E. Houghton, of Richmond, Ind., Two Etiological Factors in Pelvic Diseases in Women, Their Prevalence and Prevention, by Dr. J. H. Firestone, of Freeport, Ill.; Prognosis, by Dr. John M. Batten, of Downington, Pa.

(To be Continued.)

Japanese Sanitation in War.—If reports from Tokio and other Japanese base hospitals are to be depended on it would seem that the Japanese have learned the art of preventive medicine much better than any of their contemporaries. Typhoid and malaria are absent and the number of soldiers invalided for medical disease has been less than one per cent. Surgical asepsis is also noticeable in the surgical wards. Few wounded have died of sepsis.

AMERICAN PEDIATRIC SOCIETY.

Sixteenth Annual Meeting at Detroit, Mich., May 30 and 31, and June 1.

FIRST DAY.—MONDAY, MAY 30.

The President, Augustus Caillé, M.D., in the chair.

Intussusception: Cure by Sloughing of the Intussusceptum.—The case of a baby, seven months old, was reported by Dr. Irving M. Snow, of Buffalo. After a duration of sixteen days' illness there were symptoms simulating ileocolitis, and a gangrenous intestine protruded from the anus. Recovery took place after six inches of the intestine which protruded from the sphincter had been taken off. Four similar cases were also reported in abstract by the same speaker.

Influence of Laboratory Feeding and Weight Index of Infants Suffering from Diseases of the Gastro-Intestinal Tract.—Dr. Maynard Ladd, of Boston, had studied the effects of laboratory feeding upon 216 infants with ileocolitis, fermental diarrhea and other diseases of the gastro-intestinal tract. These infants were under treatment of the clinic for periods varying from one to thirty-one weeks, and the average duration of illness was about seventeen days in the acute cases, while some of the chronic ones had continued for several months before coming under observation. The weight increase of each infant was used as an aid in estimating the effects of the method of feeding upon children of varying ages and stages of development. The infant's weight was taken at the beginning and at the end of treatment, and the ratio of this weight to that of the average normal infant obtained, the result being the *weight index*. More than half the cases under consideration had a weight development of only 40 to 70 per cent. of the normal, when they were first placed under observation. The author divided the results of his observations into four groups, as follows: The first group comprises those infants who made complete recovery from the acute gastric and intestinal symptoms, and whose weight index was maintained or augmented while they were being fed on laboratory milk. There were 109 cases in this group, or a little more than one half the entire number. There was a gain of eight per cent. for this entire group, and the greatest average gain per week was 156 grams reckoned from the lowest average gain attained during treatment. The second group included those infants who recovered from their symptoms and gained in weight, yet displayed a loss in weight index. There were fifty-eight cases in this group, and the greatest gain per week from the lowest weight attained was 94 grams. The infants in this group were not as long under treatment as those of the first group, the duration of treatment averaging only 5.9 weeks in comparison with an average of 8.5 weeks of treatment given to the infants in group one. The gain made in this second group was not great enough to keep up the weight indices, so that there was an average loss of 3.4 per cent. The third group is made up of those infants whose weight did not increase to any great extent, although in general they recovered from the acute symptoms, gastric and intestinal, for which they came under treatment. There were thirty-seven children included in this division. Eleven cases did not improve under treatment, and no further history has been obtainable in eight instances, so that there may have been a fatal outcome in some of them. The average loss in weight

in this group from the lowest point attained was 6.5 grams per week, and the loss in weight index 7.2 per cent. The average length of time under treatment was 3.7 weeks. The fourth group consists of the fatal cases, of which there were twelve, so that the average mortality for the whole number of cases under discussion was 5.6 per cent.

Disturbances Caused by the Employment of Large Fat Percentages in Infant Feeding.—It was the opinion of Dr. L. E. Holt, of New York, that very serious disturbances result from the administration of too great a percentage of fat in the milk selected for infant feeding, even by the most experienced physicians and nurses. A very rich milk, with a percentage of fat often reaching five or even 5.5 is often employed in the same manner as an ordinary four per cent. fat milk would be used, so that the formula may reach as high as six per cent. of fat, instead of 3.5 or four as was intended. The speaker reported some cases illustrating the effects of such errors, among which may be noted the sudden and severe character of the illness, enlargement of the liver, convulsions, laryngismus stridulus or tetany, and stools consisting almost of pure fat. There were also nervous symptoms which ceased when the quantity of fat was reduced and returned one week later, as soon as it was increased to the former amount. Another case observed developed slight rickets, evinced by delayed dentition and craniotabes, with convulsions, which returned after an interval of a week when the fat was again increased to almost its original strength. There was also constipation, so that the bowels had to be relieved by magnesia. It was the conclusion of the author that in those cases where there was any disturbance of digestion the best results were obtained by a lower percentage of fat and a greater one of proteids, and this is in a measure true of infant feeding in general.

Dr. Charles C. Kerley, of New York, had not obtained the results noted by the previous speaker and said that he was in the habit of reducing the amount of food administered until the temperature and the stools returned to normal. He then gave a weak formula, with only four or five per cent. of sugar and not more than one half of one per cent. fat. The children under six months old who had come under his observation in the New York Infant Asylum did well on milk containing only about two per cent. of fat, and seemed to be less liable to intestinal derangements.

It was the opinion of Dr. C. Freeman, of New York, that the working out of the weight index was the most striking feature of Dr. Ladd's paper. Concerning the subject of the second paper, it seemed to him that there was often much confusion in the minds of mothers and nurses as to what high fats consist in. Books on infant feeding often recommend cream, and it is added quite regardless of the fact that it may be 40 per cent. centrifugal cream instead of the ordinary 16 per cent. fat.

Dr. J. Lovett Morse, of Boston, called attention to the fact that eczema and ammoniacal urine often resulted from the administration of too much fat.

Dr. B. K. Rachford, of Cincinnati, desired to find out if auto-intoxication was the cause of the nervous symptoms often seen as a result of too much fat feeding.

It was the experience of Dr. L. E. LaFetra, of New York, that infants prematurely born, and weighing from four to six pounds would often increase in weight with greater rapidity than children born at term, and would triple their birth weight at the end of the first year of life.

Dr. J. E. Winters, of New York, was of the opinion that it was often not too much fat in the food, but too much food which caused most of the intestinal disturbances under discussion. Infants were often rendered constipated because they were obliged to take far more food than they could well assimilate.

Dr. Holt thought that in cases of summer diarrheas infants were often kept too long from milk. In those cases where there was acute intoxication milk must be withheld until recovery was almost complete, but where there was simply intestinal indigestion resulting from dysentric organisms it was not so imperative.

Case of Infant Congenital Hypertrophic Stenosis of the Pylorus.—This was reported by Dr. J. Dorning, of New York. A child weighing 8½ pounds was born March 23, 1903. The parents were healthy and labor was natural. The child was fed by the breast exclusively. It vomited after nursing, but the mother said she never noticed mucus in the vomit, that the milk was always returned fluid, and the child seemed to be able to retain water. The bowels moved two or three times a day, the stools being always yellow in color. The child slept very well, and grew tall, but the limbs were always very thin. The case was seen by Dr. Dorning on May 24. The infant was badly nourished, pale and listless, abdomen distended but not tender, soft and tympanitic. In the epigastric region, just to the right of the median line, a small mass was palpable. The child died on June 7, becoming unconscious while nursing and passing away in two hours. At autopsy the stomach was found to be distended, the pylorus hard and thick, and one inch beyond it the duodenum was deeply congested. There was no ulceration of the gastric mucous membrane, although it was pale in color. There was a decided thickening of the stomach wall in the region of the pylorus. Such a condition, the author said, had now been recorded in the literature about sixty times. A study of these records would lead one to conclude that there might be two distinct pathological conditions with clinical manifestations of a similar nature, one of which is surely fatal unless there is possible relief through operation, and another which may be relieved by proper dietetic measures. It is also possible that these are simply gradations of the same morbid condition. A palpable pylorus, intractable vomiting with no apparent cause and progressive wasting are the symptoms of hypertrophic stenosis of the pylorus. The gastric symptoms are often quite prominent in cases of moderate severity yet under dietetic treatment, may improve or even appear to cease entirely, especially in those cases where muscular spasm is a noticeable factor. If there is no bile in the vomitus, an obstruction above the entrance to the common bile duct might seem to be indicated, but if bile is present it does not necessarily exclude the diagnosis of pyloric stenosis. The diagnosis may be established beyond a reasonable question, however, as well as the symptoms before enumerated, if a palpable tumor is present in the pyloric region. As it is sometimes difficult to palpate very minute masses in the upper abdominal region, the use of anesthetics may often aid in disclosing the presence of a thickened pylorus

which could not be found by the palpating finger. If symptoms of pyloric obstruction are present there is always a strong suspicion of hypertrophic stenosis, for congenital pyloric stenosis displays practically the same ones, and other conditions are so rare in infancy that they may be practically ruled out. All cases do not have the immediately fatal termination of the one cited, and such children often live some time with symptoms of dyspepsia, more or less acutely manifest.

Renal Decapsulation as a Cure for Chronic Nephritis.—A case of chronic nephritis in a female child, four and a half years old, was reported by the President, Dr. Augustus Caillé. The urine contained renal elements, blood, casts, albumin and pus, was dark in color and scanty, fluid was present in the abdomen, and the eyes were puffy. She received hospital treatment consisting of diuretics and diaphoretics, with sweating and intestinal irrigation and was discharged much improved, but nine months later returned to the hospital, when the heart was found to be enlarged and general edema to be present. After a decapsulation of both kidneys had been done a typical chronic parenchymatous nephritis was found on both sides. Both kidneys were three times their normal size and over four inches in length. The patient made an uneventful recovery and there was no return of any of the previous difficulties. The author stated that in cases of this sort he would strongly advise inspection of the kidneys by lumbar incision, in the presence of a chronic nephritis which was not relieved within a reasonable time, that is, if no heart lesion was present. The hope of preventing an acute nephritis from becoming chronic would warrant splitting the capsule or decapsulating one or both kidneys, if they appear enlarged or swollen.

In reply to a question by Dr. Kerley, as to what effect such a procedure would have should these children contract scarlet fever or other infectious disease, the author said that as the procedure was a new one, little definite data had yet been gathered on these points. Many cases had been operated upon with marked benefit, as in the one reported, but the exact benefit conferred had yet to be determined, as to whether it was on account of increased blood supply or of the massage incident to the handling of the organ. But the results from the operations which he had seen were better than from those from medication.

Epidemic Vulvovaginitis in Infants and Children.—A paper on this subject was presented by Dr. A. C. Cotton, of Chicago. An epidemic of gonococcus infection occurred in a hospital from August 1902 to September, 1903, and during this time 319 children were admitted. A urethral discharge was first noted in a boy two years old, on August 8, 1902. Next a girl suffering from typhoid fever was found to have a vulvovaginal discharge containing gonococci. The epidemic would seem to have arisen from these two patients. It was the opinion of the author that every children's hospital should take special precautions against such infection, by maintaining detention wards where new patients may be isolated for at least two weeks to insure their freedom from infectious disease, and should symptoms of any such acute infection develop there should also be completely isolated wards where the patient could be immediately removed, and placed in charge of special attendants who should have no duties in the general wards. The same care should be used in the manipulation and treatment of a gonorrhea case that would be employed in regard to any other infection of an acute nature. Gonorrhea in a children's hospital was much to be dreaded, and female infants seemed to be exceptionally prone to contract it. Cases of a secondary involvement of the uterus or cervix, or a nephritis or pericarditis had been observed by Dr. Jacobi of New York, but in his opinion it was rather remarkable that undiapered children from two to four years of age did not more often carry infection to the eyelids.

In the Babies' Hospital, in New York, Dr. Kerley had seen some twenty cases of gonococcal arthritis in two years, and Dr. Jacobi had observed one case where a myositis was present.

Two cases of gonorrheal arthritis had been observed by Dr. L. E. LaFetra. In a baby three weeks old the source of infection appeared to be from the mother who had gonorrhea at the time of the child's birth. The second case was that of a child eight months old.

Dr. Caillé stated that at present every child admitted to the Post-Graduate Hospital in New York was thoroughly examined and a swab culture made, the child being refused if gonorrhea was found. This was done on account of the possible danger revealed by a suit brought against the hospital some years ago, when a child admitted in apparently good condition, ten days later developed a specific vulvovaginitis.

Acute Scarlatinal Nephritis Simulated by Carbolic Acid Poisoning.—The case of a child ten years old, who suffered from an attack of scarlet fever of moderate severity, was reported by Dr. S. S. Adams, of Washington. There were no alarming symptoms when he first saw the child on February 3, 1904. He instructed the mother to bathe her twice daily, using one teaspoonful of commercial carbolic acid to a quart of water, to allay the intense itching of which she complained. On visiting the patient ten days later very profuse desquamation had set in. the itching had been relieved by the carbolic acid baths, and there was apparently no tingling or irritation caused by them, so that the patient's condition was excellent. He received a report on February 22 that the child was in good condition, but had passed some dark urine, specimen of which he also received. This specimen contained granular casts, albumin, hyaline and red cells, and on visiting the patient her eyes were observed to be puffy. The baths being stopped the puffiness disappeared and the urine improved. It was Dr. Adams's conclusion that the patient had an idiosyncrasy against carbolic acid, as such a weak solution was employed, but he was satisfied from the urinalysis that the symptoms of nephritis were due to the carbolic and not to the toxic effects of the scarlatina, and the quick relief of the kidney irritation when the carbolic was stopped confirmed this.

Gastro-Intestinal Toxemia.—In the paper on this subject read by Dr. B. K. Rachford, of Cincinnati, the author drew a distinction between gastro-intestinal intoxication and auto-intoxication, inasmuch as the first was a systematic intoxication caused by poison formed and absorbed by the gastro-intestinal canal. The bacterial poisons produced in this canal way be caused by the components of dead bacteria, tuberculin for example, furnishing a certain amount of protein, by living bacteria excrating toxins or ferments, that can produce the most severe symptoms, or by substances produced by

the bacteria from the culture media. Ptomains are the most important of this latter class. The great irritability and the immaturity of the nervous system of the child or infant would probably account for the greater incidence of acute intestinal toxemia in patients of that age. A quantity of poison easily thrown off by an adult might produce high fever, convulsions and other symptoms of a pronounced nervous type in young children. The fact that the hydrochloric acid function of the stomach is less developed in the child than in the adult may also account for the greater frequency of severe albuminous fermentations, which are able to produce virulent toxins, as the stomach is on that account less able to control and prevent intestinal fermentation.

The author wished especially to direct the attention of his audience to chronic intestinal toxemia, as he considered this a most important etiological factor in the production of nervous symptoms and one to which proper attention is not often directed. Even when constipation exists this form may be associated with diarrhea. The food material should not be retarded, and the feces when ejected should have the moist form of a normal movement, as it is thus hyperfermentation and increased absorption of the poisons in the intestines may be prevented. The author regarded intestinal intoxication as so important a factor in the production of nervous symptoms in children, that he nearly always began his treatment of such affections by making a thorough examination into the condition of the intestinal canal. He mentioned hyperesthesia, psychoses, nervous anxiety, hysterical and neurasthenic symptoms, bradycardia, general nervous irritability, fever, malaise, heightened reflexes and anemia as symptoms which might be produced or increased by intestinal toxemia. The presence of indican and the ethereal salts in the urine offered valuable clinical confirmation of the diagnosis. Because of the general tendency to attach so great importance to vegetable organism in the production of intestinal toxemia the part played by animal parasites is often overlooked.

Dr. Jacobi mentioned the eating of raw vegetables, as in Germany and other European countries, as likely to produce such symptoms, and also spoke of the practice of the old text-books in ascribing them to "worms." He had also thought that a protracted anemia might cause disturbances of digestion by creating an insufficiency of gastric and pancreatic juices.

It was the opinion of Dr. Forchheimer, of Chicago, that the finding of indican in the urine was unimportant. He spoke of the retention of feces being followed by diarrhea in children, and he drew particular attention to a condition he had already described, occurring more often in adults then in children, a chronic ulcerative stomatitis, taking the form of Riggs' disease in adults. In Riggs' disease he had always found uric acid and thought it caused by some auto-intoxication.

Dr. Rachford thought that the presence of indican in the urine bore a relationship to that of indol in the intestine, indol being one of the results of putrefaction and formed in the intestinal canal by hypofermentation.

Fifty-One Cases of Acute Otitis in Children.—This series of cases was from the private practice of Dr. Charles G. Kerley, of New York, and was illustrated by several temperature charts.

SECOND DAY.—TUESDAY, MAY 31.

Nervous Exhaustion in Infants.—A paper was read by Dr. William P. Northrup, of New York, on several cases of nervous exhaustion in young infants which condition was the result of too great excitement from the attentions of admiring friends and relatives whose desire to "show off the baby" had often a most unfortunate effect upon the infant. He emphasized the necessity of quiet surroundings for young children, which are desirable particularly before and after the times of feeding, and called attention to the fact that injudicious attention on part of "grown-up people" is often responsible for nervous dyspepsia, sleeplessness and exhaustion in the overpetted baby.

Presidential Address.—Dr. Augustus Caillé chose for the subject of his presidential address the benefits conferred upon the children of America by the American Pediatric Society, and the objects toward which, in his opinion, the Society might well direct its future efforts. Among the points which he deemed especially worthy of the attention of pediatricians he mentioned the popular fear of "catching cold," which prevented many homes from receiving their proper share of fresh air. It is the duty of the physician to impress upon parents and those having children in their care the necessity of proper ventilation and temperature. The modern steam-heated dwelling was too often heated to a temperature far higher than it should be, and children living under such conditions are peculiarly liable to take cold. He recommended cold bathing and proper feeding with plenty of fresh air, as the surest method of combatting these tendencies. The duties of physicians in connection with disinfection after contagious diseases he regarded as most imperative, and often neglected or improperly performed. Infection is most easily conveyed among children, and such sources as the books of schools and libraries are all too often entirely neglected. Children recovering from such infections as diphtheria were compelled to stay indoors until all bacilli had disappeared from the throat, and they were thus deprived of the tonic effect of the fresh air which they greatly need. He regarded this practice as unreasonable and not founded on positive proof. He was also opposed to compelling the removal of children affected with the ordinary eruptive fevers to hospitals, as parents fearing this were in consequence impelled to conceal the existence of such diseases, and the danger of infection thereby greatly increased. He also made reference to the successful campaign which has been waged in favor of the medical inspection of public school children. The primary object of such inspection has been to detect the existence of contagious diseases, but its field of usefulness can still be vastly enlarged. It has already revealed many unsanitary conditions in all kinds of eduactional institutions, and has aided in the detection of skin lesions, parasites and so forth, but it should be extended to include a sort of hygienic guardianship of all school children. Children abnormal from any cause should be placed under the conditions demanded by their individual needs, and a great work lies before the physicians of America in aiding backward and neurotic children to advance under conditions suited to enable them to keep pace with normal children in perfect health. Such children should have separate class rooms and receive special care and instruction. The increased efficiency of the next generation would

more than repay the extra expense involved. In regard to children in good health it was the recommendation of the speaker that increased attention to be given to the subject of the bodily training of school pupils, and he regarded the playground as being of equal importance with the school room. Personal cleanliness should be one of the first principles inoculated, the foundation of the education of every child, and too much attention could not well be devoted to it. Regarding children's hospitals, it was his opinion that the physician's duty was not to encourage the crowding of cases of minor ailments or chronic affections into such institutions. Hospital life was highly detrimental to a child. In the New York Post-Graduate Hospital regulations had been drawn up for the prevention of house infection in the babies' ward. They are as follows: (1) Strict cleanliness of premises and inmates; (2) thorough ventilation; (3) plenty of air-space; (4) no overcrowding of the wards; (5) feeding of infants by a different hand than that attending to the toilet; (6) immediate removal and disinfection of soiled linen; (7) the toning up of feeble children by a change of air, or a sojourn in the roof-garden or sunbeam playroom.

The speaker than took up the consideration of the advances possible in the education of pediatricians. For undergraduate instruction he favored didactic lectures and bedside demonstration, and a strictly clinical basis for postgraduate work. The prominent features of a course in pediatrics should be dietotherapy and hydrotherapy, with physical diagnosis and laboratory work. His own plan of instruction for many years had been to devote two-thirds of the clinic hour to demonstration on a number of sick children so placed as to be readily accessible to the students, and the last part of the time to the discussion of important principles of treatment in the most common affections, or practical demonstration of such operations as tracheotomy, bowel irrigation, intubation or spinal puncture.

Summing up the suggestions made in the addresss Dr. Caillé offered the following set of headings, under which material might be gathered from year to year and presented in the transactions of the Society, thus making a running record of the world's progress in pediatrics. At each annual meeting the Council might appoint certain numbers who would be expected to furnish a critical review for the next meeting. The headings suggested were: (1) Home, school and hospital hygiene and prophylaxis. (2) Methods of teaching pediatrics. (3) Chemical, bacteriological and regional diagnosis. (4) General therapeutics, such as nutrition, diet, hydrotherapy, electrotherapy and phototherapy. (5) Surgical therapeutics, orthopedics and mechanotherapy.

(To be Continued.)

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, June 23, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

Bone Passed per Rectum.—Dr. Anna M. Reynolds exhibited a specimen of bone passed per rectum by a woman who six years before had fallen downstairs and struck her left side, it being six months thereafter before she felt all right; on physical examination, the lower rib on that side cannot be found and the specimen looks very much like a rib.

Case of Displaced Heart.—Dr. Harry Löwenburg exhibited a case of displaced heart, following pneumonia, occurring in a child whose father died of tuberculosis. The child has been somewhat weak since the age of nine years, when he had pneumonia, having also been treated for fracture of the scapula. The apex beat is located on the right side, in the position it should have occupied in the left. The skiagraph of the case was exhibited by Dr. Geo. E. Pfahler.

Syphilis Insontium.—Dr. Harry Löwenburg also exhibited a case of syphilis insontium occurring in a girl nine years of age, who, when first seen, had a pimple on the right thigh which proved to be an initial sore. General glandular enlargement followed, accompanied by primary eruption and other evidences of syphilis.

Dr. Alfred Hand, Jr., reported a case of tuberculosis of the right lung occurring in a little girl in which the heart has assumed the dextra position.

Dr. S. Leon Gans felt that it would be interesting to know whether the sore in Dr. Löwenburg's case was originally a chancre, or whether it was an abrasion of the skin which had been infected with syphilis.

This was followed by a

SYMPOSIUM ON SUMMER DIARRHŒA OF CHILDREN.

The Etiology of Summer Diarrhea of Children.—Dr. Alfred Hand, Jr., read this paper. He stated that the disease was undoubtedly of infectious origin and that of the causative factors three stood out with striking weight: (1) summer-time, (2) infancy, and (3) bottle-feeding; the first being mainly dependent upon the delicate anatomic structure and immature physiologic functions. He stated that out of 636 cases of diarrhea in children from 1896 to 1902, in his dispensary service at the Children's Hospital, 12 per cent. occurred in May; 36 per cent. in June and 52 per cent. in July. The heat exerts its influence by lowering the resisting power of the individual and favoring the multiplication of bacteria in milk and water, which is particularly emphasized in large cities, due to the heat, stale atmosphere filled with dust and germs, and the age of the milk supply. He laid especially emphasis on the importance of cleanliness in the production and handling of the milk. He referred to the work of Shiga and Duval with the dysentery bacillus, the latter having demonstrated that out of 42 cases of summer diarrhea in infants, every one gave positive results as to the dysentery bacillus; and out of 20 cases in his wards at the Children's Hospital last summer, 12 gave positive results. He remarked that the bacillus had been isolated from water, and referred to the views of Knox and Newsholme as to the relationship between the drainage of the community and the number of cases of summer diarrhea.

Prevention of Summer Diarrheas.—This paper was read by Dr. Samuel McHamill, in which he considered as factors entering into the production of these conditions: (1) The atmospheric conditions—excessive heat, humidity and sudden fall in temperature, which act in two ways, first by increasing the bacterial contents of the milk, and second, by reducing the resisting power of the individual, the latter of which should be protected as much as possible by regulation of the clothing of the child, taking it to the country or keeping in shade, etc. (2) Defective conditions of hygiene rendering the food

liable to contamination and causing the child to suffer from lack of sufficient light and air, which should be remedied by keeping the child in the street or park, etc., as much as possible. (3) Defective conditions of the soil, resulting from dusty and torn up streets. (4) Lowered resistance from infections or nutritional disturbances, which should be guarded against by careful regulation of the diet, particularly as to digestibility, cleanliness and regular adminstration. He stated that mother's milk was the best food for the infant, and when cow's milk must be substituted, recommended that careful attention be paid to the sanitary and hygienic production thereof, as the toxic products in unclean milk can only be destroyed by a degree of heat which renders its nutritional value less. He also recommended careful attention to the nursing bottle which should be thoroughly cleansed after each nursing. Proper bathing should also be given careful attention, and water, always boiled, should be allowed freely but not within one and one-half hours from the preceding meal.

The Treatment of the Summer Diarrheas of Children.—Dr. H. Löwenburg read this paper. He considered under the following heads: (1) Prophylaxis, (2) Dietetic treatment, (3) mechanical treatment, (4) Medicinal treatment, (5) Serum treatment. Under the head of prophylaxis he regarded as the most important factors, summer heat and improper feeding. The sleeping apartments should be cool and well ventilated, and the bed covered with mosquito netting in order to prevent the contact of flies and influence of drafts. Cool bathing is also of value. The feeding of the infant should be at regular intervals, and, if possible, breast-fed; if not, pasteurized milk, if obtainable, or in the event this cannot be secured, the milk, as well as all water entering into its composition, should be boiled, the exact composition of the food to be governed by the particular case. Careful attention should also be given to the cleansing of the nipple and nursing bottle. As to the dietetic treatment, all milk should be discontinued, upon the beginning of an attack, for twenty-four to forty-eight hours, sterile water being administered at short fixed periods, preferably, if tolerated, albumin water, to which may be added expressed beef juice or brandy, and in severe cases the child must be maintained on nutrient enemata for twenty-four to forty-eight hours. The use of milk, preferably peptonized of slight strength should be gradually resumed and the strength increased. The mechanical treatment consists of lavage in cases of uncontrollable vomiting; colonic irrigation when incomplete emptying of, or combined with silver nitrate solution 1:1,000 when there is ulceration of the bowel; and hypodermoclysis in cases of cholera infantum during the stage of collapse following excessive purgation. The medical treatment consists of purgatives, such as castor oil and calomel, combined with intestinal irrigation in the fermental type of diarrhea; following this are administered the intestinal antiseptics consisting of salol, zinc sulphocarbolate and copper arsenic, which, however, have not been attended with success on account of the inability to administer them in large doses; and the intestinal astringents and sedatives such as morphia, bismuth and atropia. The serum treatment he stated was still in its experimental stage and referred to the paper read by Holt at the recent meeting of the American Medical Association.

Dr. James H. McKee, in the discussion, stated that there were a number of instances in which the streptococci had been found in milk, and referred to the work of Eskridge, Vaughan, Baginsky, Holt and Parke in this direction. As to the finding of the dysentery bacillus, he believed that there was no doubt of its presence in these cases, but the frequency varied considerably according to different observers. He stated that while he did not believe pasteurization or sterilization could replace a pure milk, these measures were of immense value, and also remarked that he had seen a number of cases of milk infection produced by pure milk. In the treatment of the cases, he recommended the withdrawal of all food and the administration of barley water for forty-eight hours, after which the resumption of milk should be gradual. In cases of fermentative diarrhea, he recommended the administration of calomel at first with castor oil later on, and the witholding of milk; in severe cases enteroclysis of normal salt solution were recommended. In these cases milk should not be resumed within forty-eight hours, but barley jelly may be administered on the third day, followed by animal broths.

Dr. Theodore LeBoutillier referred to the large amount of bacteria in the ordinary milk supply, and referred to the case of a patient who was taken with a slight attack of diarrhea which he attributed to the milk, which upon examination was shown to contain streptococci. In regard to pasteurization, he believed the home modification, if possible, to be carried out was better than the laboratory method.

Dr. W. H. Ruoff referred to the danger of producing diarrhea from bichloride of mercury formed by the giving of calomel followed by enemata of normal salt solution, and believed codeine to be preferable to morphine for a soothing effect.

Dr. William H. Good did not feel that if the calomel had not changed when passing through the gastric contents it would do so when it reached the sodium chloride as outlined by the last speaker.

Dr. H. Brooker Mills referred to the fact that he had observed the almost universal use abroad of a bottle with a long rubber tube, and that there was no more trouble there than in this country where we do away with the attachments.

Dr. McHamill, in closing, stated that sterilization should be used only as a temporary procedure, and that at the present time all ordinary milks were of such a character as to require pasteurization. He believed that if certified milk was used in winter we should be able to use it in summer without pasteurization. He remarked that the certified milk seemed to suffer more in March than any other month, which he attributed to the fact of the sudden changes of weather and insufficient icing to stand the same.

Dr. H. Löwenburg, in closing, stated that, while possibly pasteurization and sterilization might not be the best methods of destroying the organisms and modifying the toxins he felt they were the best available for the poorer classes. At the same time while it is recognized that both pasteurization and sterilization made some changes in the chemical character of the milk, rendering its digestion more difficult, it was highly probable that the bacterial disinfection was more helpful than the digestion modification was deleterious, and therefore these procedures represented minor ills. He did not believe there was any danger as suggested in the administration of calomel followed by saline enemata.

BOOK REVIEWS.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D. and Prof. J. von Mikulicz, M.D. Volume IV. Translated and edited by William T. Bull, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York; Edward Milton Foote, M.D., Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York; Carleton P. Flint, M.D., Instructor in Minor Surgery, College of Physicians and Surgeons, Columbia University, New York, and Walter Martin, M.D., Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York. Surgery of the Alimentary Tract. Lea Brothers & Company, New York and Philadelphia.

The list of contributors to this, the fourth, and in some respects the most important volume of von Bergmann's great system, comprises many illustrious names. Graser, v. Hacker, Kausch, Kehr, Körte, Lotheissen, v. Mikulicz, Schlange and Steinthal, are responsible for the original text which has been most ably translated and adopted for use in this country by the American editors. The latter have also expended much effort in enriching the already admirable collection of engravings and colored plates, so that in its present form the volume is undoubtedly one of the most beautifully and usefully illustrated books on surgery in existence.

The first section, by v. Hacker and Lotheissen, deals with the surgery of the esophagus and includes full information in a branch as yet but little developed in this country, viz., esophagoscopy. The technic of the procedure, together with the deductions to be made from its employment, are described at length and elucidated by a colored plate reproducing the pictures seen in the esophagoscope in various diseased conditions. The important subject of stricture in this region is also discussed at unusual length and the many methods of treatment devised by the ingenuity of different surgeons are well depicted and described. Steinthal contributes the section on the injuries and diseases of the abdominal wall, which is followed by a consideration of similar conditions in the peritoneum by Körte and a most suggestive section on laparoptomy by v. Mikulicz and Kausch. It is interesting to note that ether is recommended as the anesthetic of choice, an indication of the changed point of view in regard to chloroform beginning to prevail abroad. Special anesthesia is relegated to exceptional cases. The same authors have written the chapters relating to the stomach and intestines which include some of Prof. Huntington's valuable plates on the development of the appendix. The section on hernia, by Graser, has also been much improved by the addition of new illustrations. The important subject of the liver and biliary passages has been allotted to Kehr, who has produced a most satisfactory abstract of the results of his wide experience. The detailed diagnostic table for the differentiation of lesions of this region should prove very helpful in practice. The authority of the succeeding section in the spleen is not stated and the volume closes with Körte's valuable chapters on the pancreas.

The surprisingly rapid appearance of the different volumes of this magnificent work indicates unusual energy on the part of all those concerned in its production and we congratulate them on the brilliancy of their performance.

The Doctor's Leisure Hour. By Charles Wells Moulton, General Editor. Arranged by Porter Davis, M.D. Saalfield Publishing Company, Akron, Ohio.

A well-bound, broad-margined book, inviting to the laity as well as to the profession, this first volume of "The Doctor's Recreation Series" comes to stimulate the risibilities and to rouse anticipation of the remainder of the series.

The book is divided into some thirty odd chapters with headings such as "The Patient," "The Doctor's Horse," etc., and grouped with admirable selection under each are humorous poems, anecdotes, and the innumerable and venerable jokes upon doctors, students, and weary patients; interspersed from time to time are appropriate chapters from well-known books such as MacLaren's "Doctor of the Old School."

As the preface states, the articles "are not confined to the funny side of physic but include many pages of weighty and instructive matter." This, however, being not more ponderous than selections from the reminiscences of Oliver Wendell Holmes, descriptions of medical life in the past, and some short essays, holds the attention even more satisfactorily than the poems and anecdotes, many of which having served long and faithfully in the cause, though dear to the heart and venerated for their hoary age, are nevertheless beyond the power of even the Fountain of Youth to rejuvenate.

Most of the matter is very entertaining, and all of it, both the new and the old, has point. It is delightful for a half hour after dinner and makes an able assistant in the waiting room. Principally it is unlike most collections of medical witticism in that it may safely be left on the office table within reach of "the Young Person." The one regrettable thing is the pictures, of which there are fortunately few, and it is to be hoped that in the succeeding volumes for recreation they will be omitted unless they pertain more strictly to the subject-matter.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Regional Minor Surgery. By Dr. G. G. Van Schaick. Second edition. 8vo, 228 pages. Illustrated. International Journal of Surgery.

Principles of Hygiene. By Dr. H. Bergey. Second edition. 8vo, 536 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Kirke's Handbook of Physiology. Revised by Dr. Frederick C. Busch. Fifth American Edition. 8vo, 862 pages. Illustrated. Wm. Wood & Co., New York.

Text-Book of Diseases of Women. By Dr. Chas. B. Penrose. Fifth edition. 8vo, 539 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Diseases of the Skin. By Drs. J. N. Hyde and F. H. Montgomery. Seventh Edition. 8vo, 938 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

Medical and Surgical Report of the Presbyterian Hospital, New York. Volume VI. Edited by Drs. Andrew J. McCosh and W. Gilman Thompson. 8vo, 331 pages. Illustrated.

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ORIGINAL ARTICLES.

THE TREATMENT OF SCARLET FEVER WITH THE MOSER ANTISTREPTOCOCCUS SERUM.

BY HENRY L. K. SHAW, M.D.,

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LECTURER IN PEDIATRICS, ALBANY MEDICAL COLLEGE.

FOR the last four years all the severe cases of scarlet fever admitted to the Annakinderspital in Vienna have received the Moser serum with results not less remarkable than those seen after the use of diphtheria antitoxin. As this method of treatment is little known in America, an account of the preparation of the serum, the mode of employment and the results following its use may be of more than passing interest.

While the definite cause of scarlet fever has not yet been discovered with absolute certainty, for more than twenty years the claim has been made that it was due to a streptococcus. The literature on this point is now quite voluminous, and two general views are taken. Baginsky, D'Espine, and Moser believe that scarlet fever is primarily due to a streptococcus, while Heubner, Marmorek, Slawyk, Pearce, and others claim it is produced by an agent as yet unknown. The supporters of this latter view admit that the streptococcus is the most constant micro-organism found, but they explain its presence as the result of some secondary infection. A theory has recently been advanced that scarlet fever is produced by a symbiosis of the streptococcus and the unknown virus.

Courtois found streptococci in the urine of 91 per cent. of scarlet fever cases with aluminuria, and in 27 per cent. of cases without albuminuria. Charlton[1] detected streptococci in the tonsils and pharynx in 55 per cent. of his cases, and invariably in the blood of the most severe cases during the first five days of the disease. Baginsky[2] cultivated streptococci either alone or associated with other bacteria in 411 out of 696 cases, and in 82 fatal cases streptococci were found in all the organs in every instance. Hektoen,[3] who is doing some valuable work along this line in America, was only able to demonstrate streptococci in the blood of living scarlet fever patients in twelve per cent. of his cases.

Moser,[4] working in the Annakinderspital in Vienna from 1897 to 1902, was able to obtain pure cultures of streptococci in the heart blood of 63 out of 99 fatal cases, and twice in the cerebrospinal fluid of living children. From his investigations he believes that some direct relationship exists between these streptococci and the etiology of scarlet fever. In support of this view he has recently shown[5] that streptococci from scarlet fever patients agglutinate in a positive specific manner with the immune serum, and Schick also found that streptococci from the throats of uncomplicated cases agglutinate positively with the Moser serum. Weaver,[6] on the other hand, claims this agglutination is in no way specific, and is of no value as a means of diagnosis.

Behring and Marmorek both demonstrated that specific immune bodies appeared in the blood of animals inoculated with streptococci. Marmorek, believing that the streptococci were the result of a secondary infection, was the first to attempt to treat scarlet fever by injecting antistreptococcus serum. He obtained the streptococci from other sources than scarlet fever cases, and first cultivated them through animals before he inoculated horses. The use of this serum did not produce the anticipated favorable effect on the course of the disease. Aronson, in Berlin, obtained a serum from streptococci from the throats of scarlet fever patients, which were passed through animals until they had reached a high virulence similar to the method employed by Marmorek. Baginsky gave this serum a thorough trial without satisfactory results.

Meyer was the first to show that streptococci passed through animals lose their earlier agglutination power with a certain serum, and Petrusky and Koch recently pointed out the fact that in the passage through rabbits the virulence of Marmorek's streptococci was increased toward rabbits, but decreased toward man.

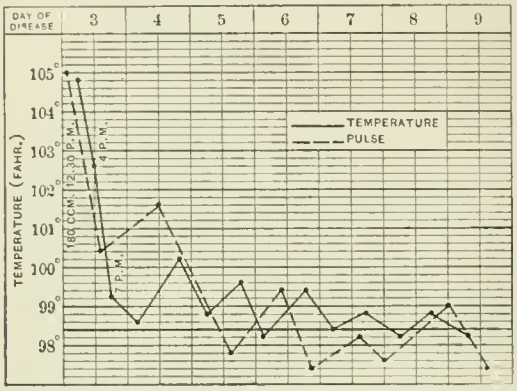
Moser employs a different method in order to prevent any biological changes in the streptococci. The horses receive injections of bouillon culture of streptococci direct from the child. Up to the present time he has isolated nearly 30 different types of streptococci, and as he injects them all his serum is a true polyvalent one. He has also shown that these streptococci differ from those found in the other streptococcic diseases of man, such as erysipelas, etc.

The steps in the production of this serum, briefly, are as follows: An ordinary bouillon culture is made from the heart blood of a fatal case of scarlet fever, and grown for three to six days. It is then injected subcutaneously into the horse. This produces a slight reaction with fever, etc. These injections of cultures from different cases are given over a week in gradually increasing doses. It takes seven to nine months to produce a suitable serum, and some horses are never able to produce a satisfactory serum. No carbolic acid is used to preserve this serum. When sufficiently potent, the serum, in a dilution of 1 to 250,000, should agglutinate the streptococci.

Freund,[7] chief of the chemical laboratory of the Wiener Rudolfs-Stiftung, isolated a poison in the stools of scarlet fever patients, which was toxic to mice. Several doses of this toxin were injected in mice with one cubic centimeter of the Moser serum. The serum protected these mice while the control mice all died.

All scarlet fever patients received at the Annakinderspital are classified on admission accord-

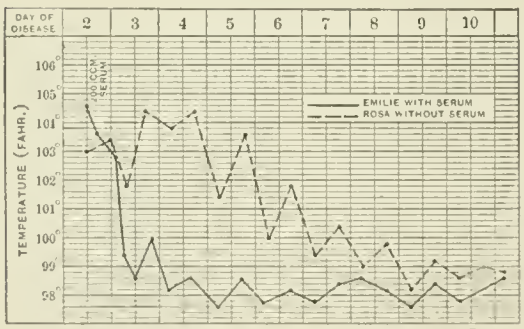
CHART 1.



John Lachner, aged two years. Group III type.

ing to the severity of the case. Group I includes the mild cases, Group II more severe cases, with high fever; Group III, very severe cases, with symptoms of general intoxication, and Group IV, the lethal cases, in which there is apparently no chance of recovery. The serum is generally employed in cases classified under the last two groups. The serum is injected subcutaneously in the abdomen. At first 30 c.c. were given, but

CHART 2.



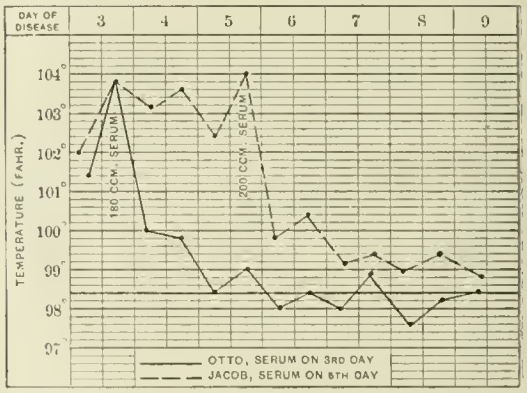
Rosa S., aged eight years, and Emilia S., aged six years. Group II type.

it was later found that larger doses were necessary, and now 200 c.c. are given as a dose. This is a much larger amount than is employed by Marmorek or Aronson, but no bad results save the serum exanthem has been observed. A second injection is very rarely necessary.

The results from the serum are noticed within a few hours. The fever falls to normal without any signs of collapse or sweating, the pulse rate diminishes, and its quality is improved, the symptoms on the part of the central nervous system rapidly subside, and there is a marked and perceptible improvement in the general condition of the child. In short, all the symptoms of a general toxemia rapidly disappear. The effect on the temperature and pulse can be seen in the accompanying chart. Chart 1 is from a child two years old, who was admitted on the third day of the disease with a severe Group III type. The temperature was 104.8° F., and the pulse 160 before the injection of 180 c.c. of the Moser serum.

The rapid fall in the temperature and pulse rate is very marked. This chart can be said to be typical of the effect of the serum on severe cases of scarlet fever. It does not demonstrate, however, the great improvement in the mental and physical condition which is so convincing to those who are able to follow the course of the disease. For the purpose of comparison, ejections of 200 c.c. of normal horse serum have been given sev-

CHART 3.



Otto W., aged eleven years. Group III type. Jacob W., aged thirteen years. Group II type.

eral times without producing any effect on the temperature or course of the disease. Marmorek's serum has also been employed without any noticeable effect.

A more striking demonstration of the effect of this serum is seen in Charts 2 and 3. Chart 2 shows the temperature curves of two sisters, aged six and eight years, who were brought to the hospital on the same day with a Group II type of scarlet fever. The child with the highest temperature, 104.6° F., was given 200 c.c. of the serum, and the temperature fell rapidly. The disease ran an ordinary course in the sister, who did not receive the serum.

Chart 3 shows the curves in two brothers, one of whom, on admission, had more severe symptoms than the other. He received 180 c.c. of serum, and made a rapid recovery. The uninjected brother, however, grew worse, and it was necessary to give him serum on the fourth

day. Charts like these could be greatly extended, but enough are shown to illustrate the striking effect of the Moser serum on the course of scarlet fever.

Sequelæ and complications have been less frequent since the use of the serum, and when they do occur they are less severe. No fatal case of nephritis has occurred in any of the injected cases.

From November, 1900, to July, 1904, 1,069 cases of scarlet fever have been admitted, and of these 228 received the serum. The severe and lethal cases are invariably injected. The mortality for four years before the serum treatment averaged 14.5 per cent. and for the four years since its employment the mortality averaged 8 per cent., whereas for the same period in the other scarlet fever hospitals in Vienna the mortality where the serum was not used averaged 13.1 per cent.

The only unpleasant result following the use of this serum is the serum exanthem. This is often accompanied with fever, and while it is not at all dangerous, it makes the children very uncomfortable. Little is known as to the cause of this serum sickness. The younger the child the more pronounced are the symptoms, and the smaller the quantity of serum injected the less apt is the exanthem to follow. Serum sickness followed the injection in 73 per cent. of the cases.

Moser injected 10 c.c. of the serum as a prophylactic measure in fourteen children in private families, who had been exposed to scarlet fever, and of these four came down with the disease. The attacks in all these cases were lighter than the ones to which they were exposed. A more instructive example was afforded in one of the hospital wards where twenty-five children were exposed. They all received a prophylactic dose and not one contracted scarlet fever. While the number of cases in which a prophylactic dose has been given are too few to give conclusive proof of its value, yet the results so far accomplished are most encouraging.

A comparison of the mortality rate from diphtheria and scarlet fever for the past ten years in the Annakinderspital illustrate the beneficent effect of serum therapy in both diseases.

Year.	Diphtheria. Per cent.	Scarlet Fever. Per cent.
1893	44.4	25.2
1894	43.	21.
1895	18.4 *Serum*	20.
1896	17.4	17.6
1897	13.6	11.1
1898	11.3	12.3
1899	10.3	6.4
1900	9.6	12.4
1901	10.7	8.9 *Serum*
1902	8.1	6.7
1903	6.5	8.5
	January 1 to July 1, 1904.	7.6

At the present time this serum is prepared only at the Vienna Serum Institute, and is not on the market. For this reason its use has been necessarily limited, and only a few clinical tests have been made outside of the Annakinderspital. Pospischill,[8] of the Wilhemina Hospital, received a supply of the serum and reported on twenty-six cases of scarlet fever thus treated. They were all of the most severe type, and eleven terminated fatally. Several apparently hopeless cases recovered, and in the conclusion of his article Pospischill testifies to the value of the serum treatment, and says that "fall in the temperature, pulse rate and respiration, increased volume and tension of the pulse, brightening of the intelligence, peaceful sleep, return of warmth of the extremities with disappearance of cyanosis, and an improvement in the appetite, are the most marked and constant results of the injection."

Bokay,[9] of Budapest, was provided with some serum, and employed it in twelve of his most severe cases. Two of these died. He observed the same effect on the temperature, pulse and nervous system, and said that, while he could not give a final judgment from so few cases, yet his impressions were most favorable, and he was convinced that the Moser antistreptococcus serum had a real antitoxic action on the course of scarlet fever. Knöpflelmacher has also used this serum with most satisfactory results in the Carolinakinderspital in Vienna, but has not yet published his experience.

Professor Escherich took charge of the Annakinderspital in 1902, and was rather sceptical about the efficacy of the serum treatment, but he later became thoroughly convinced as to its value, and is now an ardent advocate of the treatment. His paper[10] before the International Medical Congress at Madrid is a fair and convincing argument in support of the Moser serum.

I wish to express my gratitude to Professor Escherich and to Dr. Moser for their kindness in affording me an opportunity to watch the effect of the serum treatment in the scarlet fever wards.

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Eastern Medical Society.—The Genito-Urinary Section of the Eastern Medical Society will meet on Tuesday evening, November 1, at Clinton Hall, 151-153 Clinton Street, New York. Program: *Symposium on Prostatic Hypertrophy.* 1. Etiology and Pathology of Prostatic Hypertrophy, Harlow Brooks, M.D.; 2. Perineal Prostatectomy, by a Special Method, Parker Syms, M.D.; 3. Complete Suprapubic Prostatectomy, without Ether or Chloroform (with specimens of prostates removed), Joseph Wiener, Jr., M.D.; 4. The Present Attitude Towards Prostatectomy, Martin W. Ware, M.D.; Discussion by Drs. Charles H. Chetwood, Willy Meyer, Albert A. Berg and Henry Roth.

A CASE OF TYPHOID FEVER WITH REPEATED CHILLS.[1]

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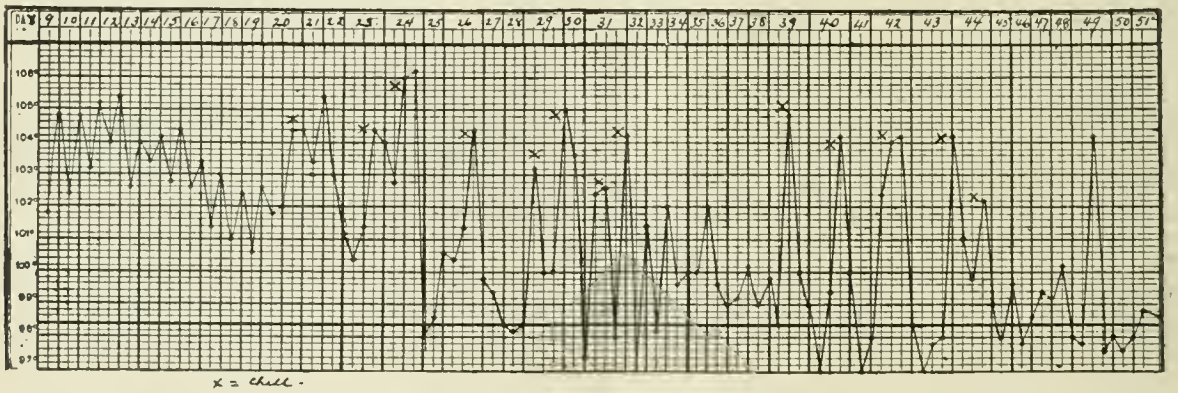
CHILLS in typhoid fever, while not uncommon, are rarely repeated or of great severity. A chilly sensation, sometimes a distinct chill, may usher in an attack, and at any time during the course of the disease the onset of a complication, especially one associated with the formation of pus, may be heralded by a distinct chill. Coincident malaria, especially toward the end of an attack, may produce its characteristic chills, and finally, chills may come in the course of the disease and even in convalescence, nothing being found to explain their occurrence. To this last class the case that I report evidently belongs.

The patient, a male thirty years old, was admitted to St. Vincent's Hospital on July 16, 1903. His family history was good. He was a moderate user of beer, whisky and tobacco. He denied any venereal disease. He had never been seriously ill before, and had suffered from nothing but the usual diseases of childhood. His present illness began about one week before his admission, with weakness, loss of appetite, and vertigo. He had headache, but no nose-bleed or vomiting, his bowels were regular and his stools apparently normal. For three days he had been sick enough to be in bed and have a physician, and at the end of that time, not seeing any improvement he came to the hospital. On admission his temperature was 103.8° F., his pulse 100, and his respirations 30.

Physical examination showed the patient of moderate size, fairly nourished and not anemic. His tongue was moist and coated. The heart was normal and also the lungs. The pulse was regular and of good quality, without arterial thickening. The liver percussed from the fifth space to the free margin. The edge was not felt. The spleen was readily palpable one inch below the free margin of the ribs and was slightly tender. His abdomen was not distended, but was sparsely covered with typical rose spots. His urine gave a marked reaction for indican and his blood a strong Widal reaction in a dilution of 1 to 50. He was put on the usual typhoid treatment and was given sponge baths for a temperature of 102.5° or over.

For the first week there was nothing of note, his condition remained good, his temperature varied between 102.5° and 104.6° F., being fairly controlled by sponging. His pulse remained about 100 and of good quality, and he received only one-half ounce of whisky every four hours.

On the tenth day after his admission, approximately the seventeenth of his disease, his temperature dropped to 101° F. and remained low for three days and everything seemed favorable. Then on the twentieth day of his illness he had a severe shaking chill, lasting one-half hour, followed by a rise of temperature to 104.2° F. Nothing abnormal could be discovered, especially were the lungs clear. At this time the urine contained a trace of albumin with a few granular casts. No malarial organisms could be found in the blood after repeated search and his leucocytes were 7,600. The following day, the twenty-first, he had no chill, but his temperature rose to 105.4° F.



On the twenty-third day he had another chill, and on the twenty-fourth still another, followed by a temperature of 106.2° F. With this last chill he became much cyanosed and did not react well, so that for the succeeding temperature no bath could be given, and it was necessary to put him in a hot pack. Careful examination twice a day failed to reveal any cause for the chills. These were repeated on the twenty-sixth and twenty-ninth days, on which latter day he had two. On the two days between the temperature was nearly normal, and between the chills his general condition was fair, but during and after the chills he seemed almost *in extremis*. On the thirty-first day there were two more chills, but from then on for eight days, only a slight irregular temperature, usually under 100° F. The chills were repeated on the thirty-ninth, fortieth, forty-second, forty-third and forty-fourth days, followed each time by a temperature of 104° F. or over, and once a drop to 96° F. in four hours.

On the forty-first day he developed a femoral thrombosis of the right leg, which was tender and caused some edema, but did not otherwise compli-

cate matters. Frequent examination of the blood failed to show a leucocytosis, a blood culture was negative, and nothing additional could be detected. The patient became very much emaciated and so, irrespective of the chills, was fed on eggs and junket, with toast and scraped beef, in addition to the milk.

There was a cessation of the chills from the forty-fourth to the forty-ninth day, when the last one took place, being apparently as severe as any of the others, and followed by a temperature of 104.2° F. After this there were no more chills, but occasional elevations in temperature.

It will thus be seen that there were 14 distinct chills, all followed by a marked rise of temperature. In endeavoring to account for them we may, I think, disregard malaria. Repeated examinations of the blood failed to show organisms, there was no periodicity about the attacks and the exhibition of quinine, ten grains three times a day, had no effect upon them.

The signs of complications were looked for in vain, the lungs were always clear, the bones, the gall-bladder and kidneys never gave any signs of involvement and there was never any leucocytosis. The one abnormality recognized was the femoral thrombosis, but it would be difficult to hold this responsible for all the trouble, as the chills began twenty-two days before its appearpearance and there was none on the day that it was first seen.

We can then do no more than say that this was a case of typhoid fever with repeated chills of unknown origin.

OSTEOPLASTIC GASTROTOMY FOR IMPERMEABLE CICATRICAL STRICTURE OF THE ESOPHAGUS.

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In view of the very recent introduction of osteoplastic operations as a means of reaching hitherto inaccessible parts of the organs situated within the cavity of the diaphragm, the following case may be of interest:

S. F., male, fourteen years of age, swallowed a large quantity of caustic lye, by mistake, in February, 1896. He was immediately taken to a neighboring hospital, where the stomach was washed out. It was necessary to resort to rectal feeding. Ten days later he was admitted to one of the city hospitals, where gastrotomy and division of the stricture by Abbe's string method, at the same sitting, were done one month later. Under suitable after-treatment the boy was soon able to take food again by way of the mouth. He remained at the hospital about a year, a bougie being introduced every few days and left in the esophagus for twenty-four to forty-eight hours, while the patient swallowed his food alongside the instrument. But in spite of all that was done, the esophagus showed great tendency to recontraction. By the end of the year the stricture had reformed, and a gastric fistula, according to Witzel's method, had to be established. All attempts at passing the esophagus from above or below were unsuccessful and the boy had to be fed entirely through the gastric fistula. This was kept up for seven years, when the mother, anxious that something should be done for the relief of the boy's condition, brought him to the German Hospital in September, 1903. On examination it was found that the stricture in the esophagus was absolutely impermeable. Then, with the view of perhaps facilitating the finding of an entrance from above, Dr. Torek (at that time in charge of my service) established an esophageal lip-fistula; but this, too, proved of no avail.

When I first saw the patient, September 21, 1903, the entrance into the stricture was so tight that it was impossible to pass even a filiform bougie into the stomach by way of the esophageal fistula. The instruments could be pushed forward for about two inches and then became bent. The retrograde passage was, therefore, tried. After thorough irrigation of the stomach, and filling the latter with water, the electric cystoscope was introduced through the gastric fistula and attempts made to locate the cardia, but without success. At the site of the cardia was an irregular scar, surrounded by a zigzag line, but no lumen could be detected anywhere. The same negative result was met at repeated subsequent sittings. Thereupon the direct view with the help of the Rochester cystoscope—the stomach being filled with air—was tried, but also in vain. Our endeavor to find and enter the cardia with a long urethro-endoscope, likewise, failed. The idea of gaining entrance to the esophagus from the stomach, therefore, had to be given up.

Hence, the route through the esophageal fistula again was tried. Kelly's cystoscopic tube (No. 10), with the boy's head in a hanging posture and turned to the right, was pushed forward until resistance was met with. A small electric lamp, on a curved handle, was then introduced into the tube, down to its distal end and thus the upper entrance into the stricture could be clearly seen. The picture presented the exact appearance of a cervix uteri, that is to say, there was a mass, evidently made up of scar tissue, projecting upward into the lumen of the esophagus, showing in its middle a minute hole, from which bubbles of air were pressed out in coalition with respiration. This spot was probably about one inch above the bifurcation of the trachea. A fine probe passed for a distance of about one half inch. Efforts to distend the canal with fine laminaria tents and to push down (of course, with moderate force) a straight metal probe, as the passage of flexible bougies was always quickly arrested, were continued for the following eight to ten weeks.

As the procedure, however, became too painful and general anesthesia was required for each sounding, it was thought best to have but one sit-

ting a week, so as not to overtax the already greatly reduced strength of the patient. It was found during these maneuvers, that the lumen of the esophagus was curved at various places. Generally, on deep inspiration only, the instrument slipped down further and further. By the beginning of December the probe passed down the esophagus to such length that it should have entered the stomach, according to measurement made, after withdrawal, on the outside of the chest. It was therefore inserted again and the cystoscope introduced through the gastric fistula. But the tip of the probe could not be detected in the stomach, nor could it be reached by means of curved metal probes passed in the same

Sidney F.—Osteoplastic gastrotomy. Curved scar shows line of incision. Below the same scar resulting from former gastrotomy and gastrostomy; exit of tube at inner angle. On the neck esophageal lip-fistula.

way. It was therefore concluded that the probe must have entered a false passage and have been arrested above the diaphragm.

In this emergency I resolved to raise the left border of the ribs by means of an osteoplastic operation, as recently described by Marwedel.[1] Of course, the task here was somewhat different from that in the operations mentioned by Marwedel and Asthoewer, who had done two somewhat similar operations several years previous.[2] In my case it was necessary to avoid interfering with the gastric fistula, if possible, and keep the stomach firmly attached to the abdominal wall. The incision parallel with the border of the ribs up to the ensiform process could not be carried out.

The operation was done on December 21. As the accompanying illustration will show, a U-shaped incision was made, the tip of the anterior leg corresponding to about the middle of the cartilage of the seventh rib, the convexity dividing the skin just below the border of the ribs. After the skin covering the region of the gastric fistula had been well pulled down in order to reach tissue that had not yet become interwoven with the scar, the tip of the posterior leg of the U crossing the outer end of the cartilages of the tenth, ninth, eighth and seventh ribs, it was possible to enter the abdominal cavity about one-half inch above the gastric fistula. The seventh cartilage having been divided with a knife near the sternum and those of the other ribs on the outer side, likewise, it was possible, by means of sharp retractors, to raise the flap sufficiently to allow a good view of the wall of the contracted stomach about 1½ inch above the region of the gastric fistula.

For reasons not apparent at that time, the flap did not yield sufficiently to permit of proper access to the cardia. As it was absolutely necessary to keep the gastric fistula intact, this point was not pressed. According to the plan of operation previously arranged, the patient was now placed in a pronounced Trendelenburg posture and the entire subdiaphragmatic space on either side of the stomach well packed with loose aseptic gauze in order to avoid soiling the peritoneal cavity. Two silk threads were now passed through the gastric wall, serving as retention slings, and the stomach was pulled into the wound on the outer side of the gastric fistula, the position of the patient remaining undisturbed. A horizontal incision about two inches in length was then made into the stomach. The further procedure resembled prolonged intravesical work after suprapubic cystotomy. Large blunt retractors were introduced into the stomach and the depth of the organ was unfolded by means of sponges on a handle.

With the small electric light the region of the cardia could be very closely inspected, but the cardia could not be seen. There appeared in the upper part of the fundus, about one inch to the left of the spot where the cardia ought to be, a minute hole, from which, at times, a few bubbles of air were seen to emanate, just as we had perceived them at the upper entrance in the esophagus. Perhaps this small hole was the cardia, drawn aside by cicatricial contraction or it had to be looked upon as the lower end of a false passage made with the metal probes so frequently passed. Various kinds of instruments introduced into the same met with an insuperable resistance. There, furthermore, was to be seen at the normal site of the cardia that stellated scar, observed before with the electric cystoscope. After this vain search for the cardia the stomach was temporarily

1 Centr. f. Chirurgie, 1903, No. 35, p. 938.
2 Ibid, p. 125.

packed with gauze, the table lowered and a metal probe, introduced from above by means of the Kelly cystoscope, gently pushed down as far as we had succeeded in gaining a passage for it on former occasions. This was firmly held in place by an assistant, the patient's pelvis again raised and, with a finger in the stomach, the lower end of the probe was searched for, but could not be felt. Evidently its tip was in a false passage above the diaphragm, as concluded at previous occasions. A grooved director inserted through that small opening repeatedly referred to, likewise, failed to meet the probe in the esophagus.

At about this time a peculiar tearing sound was heard, and the assistant who held the osteoplastic flap back with a pair of sharp retractors noticed that it had yielded considerably and could be lifted back much further than before. With the view of possibly overcoming the twisted course of the lower end of the esophagus, the stomach wall was grasped with several Muzeus's forceps around that small hole from within and pulled forward as we are wont to do with the bladder when extirpating a vesical tumor. But this proved to be a very disturbing factor in our work. The gastric mucosa being much thicker than that of the bladder, the teeth of the forceps had principally grasped the mucosa and, on continued traction, tore out one after the other, leaving persistently bleeding small tears, which blurred the picture in a most annoying way. The intention had at one time, to divide the stomach wall from within with Paquelin's cautery on a grooved director introduced through that small hole mentioned before, was given up again, on account of the result being too uncertain. This would have been the only chance for a successful issue of the task, according to my present view of the case.

In order to accomplish something in the way of helping the boy, if at all possible, a slender dressing forceps was now placed with its tip on that stellated scar, which had been regarded as probably representing the cardial orifice, pushed through the slightly resisting tissue and gently pressed upward for a distance of two to four inches. It was then opened and held in place. Through the opening thus made air was heard to pass in and out with each respiration. Various instruments were then pushed up, but all of them were arrested in their course at the same point, without touching the probe. Further attempts were thereupon abandoned. The new incision in the stomach was closed with a double row of Lembert silk sutures.

After the table had been lowered it was seen that much better access had been gained to the cardia than we had had in the beginning of the operation; the resistance of the flaps had evidently partially yielded to the continuous traction that had been applied. The cardia and immediate neighborhood of the stomach now were clearly visible and it was noticed, that by pulling on the stomach, the lower end of the esophagus could be pulled down. Had it not been for the precarious condition of the feeble patient, I should have at once made a second incision in the region immediately adjacent to the lower end of the esophagus and continued my efforts to carry my point. As it was, I had to give up all further attempts for the time being. The osteoplastic flap was fitted back in its former place, the skin being sutured with interrupted silkworm gut, without drainage. Recovery followed. Nutrient enemata were given for the first three days, when feeding through the gastric fistula was resumed. At present the patient is gaining about half a pound a week and, with careful nursing his general condition is steadily improving.[1]

It is needless to say that my inability to gain a passage through the esophagus from below was a great disappointment to me. I had hoped to see a silk thread pass from the gastric to the esophageal fistula at the end of the operation. Perhaps I should have been more successful had the osteoplastic flap yielded as fully in the beginning of the operation at it did toward the end. I should then probably have changed my plan and attacked the lower portion of the esophagus, with the patient on his back, and made an incision running directly up toward the region of the cardia.

As I do not believe that the boy, undeveloped as he is, will grow up properly under present conditions, it is my intention as soon as he has gained sufficient strength, to again raise the chest flap, open the stomach close to the cardia, follow up that blind canal mentioned above and try to find the way upward.

Surely this operation has shown me the great help we may expect from this osteoplastic raising of the lower part of the thorax, when it becomes necessary, to reach the ordinarily inaccessible organs situated in the convexity of the diaphragm.

It is my belief that gastrectomies, which hitherto may have appeared impracticable on account of insufficient access to the proximal end of the stomach, may now still be carried out by means of this osteoplastic operation. It further seems evident, that, by the help of this procedure, our surgical work within the vault of the diaphragm—on the left as well as on the right side—will gain considerably in exactness.

THE ETIOLOGY OF GASTRIC HEMORRHAGE.

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Ulceration is the most common cause of hemorrhage from the stomach, but there are many other possible and probable conditions which may act as etiological factors.

So numerous are these different causes that they may be very conveniently designated as: (1) stomachic, (2) extra-stomachic, (3) unknown.

The conditions classed under *stomachic,* will

[1] Patient was presented before the New York Surgical Society on January 27, 1904.

include all those in which the primary cause of the hemorrhage is to be found in the stomach. With the hemorrhage due to *extra-stomachic* causes will be included, those in which the chief and primary cause is to be found in some of the adjacent structures; the gastric disturbance being but a secondary matter. Under the heading *unknown* will be classed the hemorrhages which cannot be accounted for pathologically.

In Stomachic Causes.—The frequency with which hemorrhage is detected in cases of stomach pathology, will depend to a very large extent upon the investigator, the more carefully it is looked for, the more frequently it will be found. The most frequent cause of gastric hemorrhage is ulcer of the stomach, which according to the most reliable authorities, occurs in about five per cent. of the entire population, though this percentage is questioned and severely criticised by Byron Bramwell.

Hematemesis, either chronic or acute, is present in from 45 to 80 per cent. of those afflicted with gastric ulcer. Leube found it in 46 per cent. of 556 cases, Ewald in 364 cases noted it 203 times, 54.5 per cent, while Greenough and Joslin discovered it in 81 per cent of 187 cases.

Ulcer and hemorrhage occur more frequetly in females than in males, and usually in the third decade of life.

Gastric ulcer may be described as a loss of substance of the stomach wall, "a progressive necrosis of tissue." The most usual form is the chronic, which may vary in size from 1 to 10 cm. in diameter. Its base may consist of any of the layers of the stomach wall, depending upon the destruction of tissue that has taken place. Its edges are terraced, involving more of the mucosa than the deeper structures, and are sometimes, but not always thickened, and indurated. In shape it generally resembles a shallow saucer, and may be either single or multiple. It is usually situated in the pyloric region, near the lesser curvature and most often on the posterior wall.

The acute form is similar to the chronic except that the deeper layers are as much involved as are the more superficial ones. Giving to the acute ulcer the "punched out" form described by Rokitansky, there is very little, if any, thickening, induration, or inflammatory reaction surrounding this type of ulceration. Hemorrhage or perforation may occur in either form.

The erosions of the stomach are closely related to ulceration, so closely, that some authorities consider them to be antecedents of ulcer, while others believe them to be separate and distinct lesions. They are small streaks, or rounded areas, from the size of a millet seed to that of a split pea, over which there is a loosening or a loss of the mucous membrane and on which is found extravasated blood, varying in color according to the stage of disintegration. Their number is variable, likewise their situation, though there seems to be a predilection for the region of the pylorus. Dieulafoy has divided these erosions into simple erosion, in which merely the surface epithelium is absent, and exulceration simplex, in which there is an extension to, and an involvement of the vessels which lie beneath the muscularis mucosa.

There are various theories advanced to explain the occurrence of ulceration of the stomach; such as an increase in the quantity or the quality, of the gastric juice, alkalinity of the blood, embolism or thrombosis, impoverishment of the blood, traumatism or irritation, spasm, nervous or trophic disturbances, omental adhesions, etc. But it may be said that the exact cause of ulcer of the stomach, if there is one, has not as yet been definitely determined.

Erosions are explained by the occurrence of an interference with the circulation of the superficial layers of the mucous membrane, which results in a hemorrhagic infiltration and digestion by the gastric juice, being practically the same as the embolic theory of gastric ulcer. Microscopically the ulcer will show but few changes of a marked character. Besides the loss of tissue, molecular changes in some cells, more or less round-cell infiltration and a proliferating endarteritis, there will be but little of note. The erosion shows, in the majority of cases, a loss of the superficial part of the mucosa, and, with the exception of an infiltration with red cells, there will be very little variation from the normal.

As the ulcer progresses, it involves numerous blood vessels; at first small ones, and then, as it invades the deeper structures of the wall, the larger vessels are eroded. Hemorrhage may be entirely lacking, or in such small amount as to be practically negative. Small hemorrhages may be repeated very frequently, or become practically continuous, resulting in very severe anemia. Larger hemorrhages may occur at intervals, or but once, and never be repeated, or may immediately terminate fatally. All this variety of hemorrhage from ulcers quite similar in character, and the fact that in one ulcer a large artery will be eroded with no hemorrhage, and that in another ulcer, comparatively small, involving only the smallest vessels, there will occur a hemorrhage so profuse as to cause death, has been explained by Ewald on the supposition that, in these cases, there exists a certain predisposition to a deficiency in the fibrinoplastic power of the blood, and with this an insufficient or ineffectual formation of thrombi.

Acute or chronic gastritis may, in aggravated cases, cause blood to appear in the vomitus, but a distinct hematemesis will but very rarely occur; as it may with tuberculous, typhoid, diphtheritic or other specific ulcerations of the gastric mucous membrane. The hematemesis caused by carcinoma, will usually be easily differentiated from that caused by ulcer, by means of the history, and the character of the vomitus, the "coffee-grounds vomit" of cancer. But in the early stages of carcinoma, and in the unusual case it will be impossible to differentiate, just as it is often im-

possible to differentiate by other signs or symptoms, or even by macroscopic examination. The fact that carcinoma develops from an ulcer in a certain proportion of cases, makes this differentiation more difficult and obscure.

Traumatism, direct or indirect, has been the cause of hemorrhage from the stomach in quite a few instances. And it should be remembered that hematemesis following a penetrating wound of the abdomen, does not necessarily imply that the stomach has been perforated. The accidental swallowing of foreign substances, such as pins, needles, tacks, etc., bones, glass, seeds, stones, or other materials in food and drink, may cause hemorrhage. Kocher mentions an instance in which hemorrhage was caused by the lodging of a cherry stone in an ulcer. Corrosive poisons, strong acids, alkalies or other irritants, such as drastic purges or emetics may excite bleeding.

Continuous vomiting or retching, the use of the stomach tube, or aspiration by the stomach pump, may injure the mucosa sufficiently to cause slight bleeding. Inflation of the stomach with CO_2 for diagnostic purposes has in one instance caused death, by exciting hemorrhage from the base of an ulcer. Another cause of gastric hemorrhage, to which attention has not been adequately attracted, is operation.

Instances in which operations of gastro-enterostomy, for benign stenosis of the pylorus, and gastrorrhaphy for perforation have been followed, after varying intervals, by hemorrhage from gastric or duodenal ulcers, have been reported by Furner, Collins, Eccles, White, W. Petersen, English, Keetley and others. Eccles, in explaining his case, says: "It is probable that the manipulation necessitated by the delivery of the stomach for operation, caused a fresh extension of the duodenal ulcer." Fatty, hyalin, amyloid or other degenerative changes of the vascular wall have been ascribed as causes in some few instances. Miliary aneurism has also been found to be the cause of hemorrhage. The swallowing of leeches, and the larvæ of insects, have been known to be followed by the vomiting of blood.

Extra-stomachic Causes.—The chief causative factor of hematemesis, outside of the stomach proper, will be found in various conditions, giving rise to interference with the portal circulation, as is best exemplified by cirrhosis of the liver. J. P. Frank, in 1794, was the first to observe the relationship of cause and effect, between cirrhosis of the liver and the vomiting of blood. Since then a number of most excellent articles have been written upon this phase of gastric hemorrhage. Law, in 1828, was one of the first to emphasize the subject. In 1884, Benz could find only 19 cases, but Debove, in 1890, and in 1900, Preble added so materially to the literature. Welch says, "Next to ulcer and cancer of the stomach, cirrhosis of the liver is the most frequent and important cause of gastrorrhagia."

Not alone cirrhosis, but any disease of the liver, such as syphilis, senile atrophy or portal thrombosis, capable of exerting pressure, or otherwise interfering with the portal vein or its subdivisions, may give rise to congestion of the gastric mucous membrane, and in turn to hematemesis. This variety of hematemesis, due to congestion of the mucosa, is not the common form, the more usual, 80 per cent. according to Preble, is the false gastrorrhagia, from esophageal varices. These esophageal varices form, at the esophageal, collateral portal circulation. Owing to the difficulty experienced by the portal blood in passing through the liver, numerous collateral circulations are established. One of these, at the esophageal opening of the stomach, where the gastric and esophageal veins anastomose, is frequently the site of great dilatation. Varices or esophageal "piles," as they have been called, are thus formed. These dilated and attenuated veins may rupture, and allow the escape of the blood into the stomach, from which it is vomited, causing a false hematemesis almost impossible to differentiate from the true.

Venous congestion may be caused by various other conditions such as enlargements of the spleen, or other intra-abdominal organs, adhesions to the stomach or other viscera. Causes of congestion other than interference with the abdominal circulation are less common. Interference with the thoracic circulation, as by emphysema, chronic pleurisy, fibroid lung, or by uncompensated cardiac lesions, may indirectly result in gastric congestion, and hemorrhage, but these are to be considered as very rare and exceptional, although not impossible, causes.

A simple perforating ulcer, *i.e.*, one perforating directly into the peritoneal cavity, comparatively seldom gives rise to hemorrhage. In Tinker's table of 76 cases of perforating gastric ulcer, details under the heading "Character of Attack" are given in 52 cases. In these 52 cases vomiting of blood was noted only five times. English found in 50 cases operated upon for perforation that hematemesis was mentioned eight time in the previous history (and twice it immediately preceded the perforation), but in ulcers perforating into adhesions or adjacent organs hemorrhage is much more common. The source of the blood may be very remote, and the course circuitous and obscure.

The rupture of the ventricle of the heart, an aneurism of the aorta, or some of its branches, a perigastric abscess or some similar condition, may possibly account for hemorrhage from the stomach.

Just what rôle is played by the central nervous system in exciting gastric hemorrhage, is not definitely known or settled. The intimate relationship of the stomach with the central nervous system by means of the pneumogastric nerves, as well as the communication with the sympathetic nervous system through the solar plexus, seems to make more plausible the theory

that some varieties of gastric pathology and hemorrhages may be directly due to lesions of the nervous system. Gastric hemorrhages have been noted in the source of epilepsy, tabes, hysteria, hydrophobia, tuberculous meningitis, progressive paralysis of the insane, and other nervous diseases. Nervous or emotional loss of balance are frequently followed by various manifestations of functional disturbances of the digestive mechanism.

One of the first cases in which a lesion of the central nervous system was demonstrated in hematemesis, was that of Dr. Brittan, reported by H. Bence Jones in 1860. A woman, aged twenty-nine years, had persistent stomach symptoms resembling those of ulcer. She twice vomited blood and died. At autopsy, all the viscera were found to be healthy, excepting a cyst in the fourth ventricle of the brain. Dr. Brittan concluded that irritation of the roots of the pneumogastric nerves by the cyst was the cause of the gastric symptoms.

Since then many similar cases have been reported and numerous experiments have been carried out with the object of ascertaining the exact relationship between lesions of the nervous system and abnormal conditions of the stomach wall, and as these conditions frequently give rise to hemorrhage, they will be of interest in this connection.

The experiments have consisted of such operations as cutting of the spinal cord (Koch and Ewald); intersection of thalami and cerebral peduncles (Schiff); destruction of the anterior corpora quadrigemina (Brown-Sèquard and Ebstein). Hemmeter observed submucous hemorrhages and small areas of necrosis in the stomach eight days after section of one or both vagi, in cats, dogs, guinea-pigs and rabbits. Saitta severed the vagus on both sides in sixteen rabbits and fed them on a weak solution of hydrochloric acid, and induced multiple ulceration with gastritis; in control animals with vagi intact, the procedure had no effect. Yzeren found that by dividing the vagi below the diaphragm that an ulcer was produced corresponding to those ocurring in the human stomach. The ulcer was usually situated in the pyloric region, close to the lesser curvature, and other regions of the stomach were not affected. The stomach became harder, which he supposed to be due to contraction, spasm, thus according with the theory of Talma. Fütterer has repeated many of these experiments, and calls attention to the difference between these artificial ulcers and those occurring in man. In the former healing is in progress, while, in the human stomach, there is no tendency to heal. It was only after destruction of a portion of the hemoglobin of the blood, that he was able to produce ulcers in animals that corresponded in both macroscopical and microscopical appearance, to those occurring in man.

As showing the present status of this theory as to the cause of gastric ulceration, we may quote from Welch: "Although ecchymosis in the mucous membrane of the stomach can be experimentally produced by injury of various parts of the brain and spinal cord, there is no proof that gastric hemorrhage which is of clinical importance is referable to structural diseases of the nervous system." And from Thoma, "As a matter of fact we find comparatively often in severe affections of the brain and the medulla oblongata, that there are numerous hemorrhages in the mucous membrane of the stomach and in the lungs. This is not very convincing proof, however, since a similar result is often seen in other diseases. All we can do in the mean time, is to accept the facts and ask further, whether the nerves are able to influence the permeability of the capillary wall."

III. Unknown Causes.—The occurrence of hematemetis, and the failure at autopsy to locate the site of the hemorrhage, has been the cause of considerable speculation and theorizing. Different terms have been used to signify this sort of hematemesis as, idiopathic, parenchymatous, capillary, hematemesis, analogous, active, constitutional. Watson, in 1832, expressed doubt as to the existence of this condition when he said, "Whether it be idiopathic, if indeed it ever be so." A different conception of the term is shown by Chomel, who, in 1841, said: "There are indeed cases, but in small number, where the hematemesis is evidently idiopathic. The complete return to health after such a hematemesis,, leads to the conclusion that it really was idiopathic."

Flint says: "Hemorrhages sometimes occur from the stomach, as from the bronchial tubes, the Schneiderian membrane, and in other situations, without any apparent pathological connections, neither following nor preceding any appreciable morbid conditions. It is then to be considered idiopathic." Welch tersely sums up the question when he said: "Whatever hypothesis one may construct from these so-called idiopathic hemorrages, the recognition of the clinical fact of their occurrence is important."

In recent years there is little, if any, more enlightenment upon this peculiar phase of the subject, than was given to us in 1842 by Audral when he said: "The blood accumulates in the vessels of some part of the mucous membrane and then escapes from them, and this is all we are able to discover."

As showing the circle within which investigations are frequently carried, a review of the explanations of these hemorrages will be instructive. In the early days as the escape of blood always followed the severing of an artery, it was reasoned that all hemorrhages followed the rupture of arteries. But Morgagni, in 1769, demonstrated by his dissections that the solution of the continuity of blood vessels was not a necessary antecedent for hemorrhage. Bichat, in 1799, propounded the so-called theory of

hemorrhage by exhalation, *i.e.*, the direct passage of the blood through the capillary wall. This was for many years accepted as the correct explanation of these cases by the foremost writers of their time, such as Watson, Tweedie, Goldie and others. But in 1865, Wm. Brinton, in a lecture upon disease of the stomach says: "In noticing the causes of gastric hemorrhages little need be said of the old doctrine of hemorrhage by "exhalation", through the coats of the vessels apart from any solution of their continuity. For we now know that the walls of even the finest capillaries have no pores of appreciable magnitude, such as would be necessary for the transit of blood corpuscles, and hence the extravasation of these structures is proof positive of some vessel having been ruptured. That among the myriads of these minute tubes present, the eye often fails to detect the exact vessel or vessels involved in the lesion, is of course not very surprising."

In 1867, Stricker and Cohnheim observed the passage of red blood corpuscles through the capillary wall and termed the process "diapedesis." Since then the possibility of diapedesis, as an explanation of these obscure cases has been accepted, but only after a most careful and painstaking examination of all the viscera has failed to reveal another cause.

At the end of 1903, Gerasimovitch cited a number of cases of hematemesis in which the only accountable causative factor was peritonitis. And upon a microscopical examination of the mucosa of the stomachs, minute hemorrhages by diapedesis were discovered. Welch, in this connection says: "Doubtless small gastric hemorrhages, particularly those into the tissues of the stomach, are often the result of diapedesis, but in case of profuse hemorrhages from the stomach, where the source of the hemorrhage is not demonstrated after death, the convenient assumption of hemorrhage by diapedesis, in my opinion, plays too important a rôle." He further states "that our knowledge of diapedesis does not warrant the belief that the red blood corpuscles can escape through the unsuffused walls of the vessels with the combined rapidity and abundance which would be necessary to explain the sudden and profuse hemorrhage."

It is the opinion of many that the origin of these so-called idiopathic hemorrhages, would be cleared up if a more careful examination were made. Ewald refers to the esophageal varices as an unsuspected and frequently undetected cause of hematemesis. Welch mentions a number of cases in which miliary aneurisms of the gastric arteries could have been easily overlooked. It is a significant fact, that cases of this variety appear to be decreasing in frequency, supposedly due to a more careful examination.

Dislike, as much as we may, to use the term *idiopathic* in this day and generation it must nevertheless be admitted that gastrorrhagia does undoubtedly occur, and at autopsy no rational explanation for the bleeding can be found. Such a case occurred under the master hand of Ewald in 1891. And similar ones have occurred in the experience of other experts. As showing the possibilities, in such obscure cases, that of John Mackintosh, published in 1837, will be interesting: A child died suddenly after vomiting a considerable quantity of blood. On dissection, the stomach was found filled with coagulum, and there was also some fluid blood in the small intestine. It was evident that there had been active hemorrhage, but after the most minute investigation, no blood vessel could be found from which it had issued. The contents of the thorax, including the great vessels, and the esophagus were dissected out, and examined at leisure. It was then discovered that the blood found in the stomach and bowel had proceeded from a ruptured artery in a cavern in the superior lobe of the left lung. A fistulous opening connected this cavity with the esophagus through which the blood passed into the stomach.

Hemorrhages from the stomach occur occasionally during the course of different diseases, such as typhoid, typhus or yellow fevers, cholera, measles or scarlet fever. Such hemorrhages are explained in various more or less satisfactory ways, such as the presence of bacteria in the blood, the breaking up of the corpuscular elements of the blood, or changes in the vascular wall owing to the alteration of the blood by toxins or otherwise. But it may be stated that the cause of gastric hemorrhages in such general diseases is not understood.

Melena neonatorum; gastric or duodenal hemorrhage sometimes accompanied by hematemesis, in the newly born, is likewise due to unknown causes.

A strong and unexpected shock of electricity to the epigastrium has been known to be followed by profuse hematemesis leading to death. No autopsy was performed.

Under this heading, unknown causes, must be included the so-called vicarious menstruation, and postoperative hematemesis. Many examples of vicarious menstruation will be found in the literature, cases in which, for some reason or other, the menses cease to flow, and in place of which, there occurs a vomiting of blood. Similar compensatory hematemesis are said to occur, in place of an interrupted, periodic epistaxis, or hemorrhoidal flow. The existence of such conditions are denied by many, but the majority of authorities seem to acknowledge such possibilities and their very rare occurrence. English found hematemesis undoubtedly more frequent before the onset of menstruation, which he explained by the high blood-pressure, at that time.

Postoperative hematemesis must be divided into three varieties: (1) Hematemesis, following stomach surgery, due to imperfect suturing or hemostasis. Such a hemorrhage will be con-

sidered as secondary. It must be remembered that the gastric mucosa, on account of its abundant blood supply, is liable to bleed freely after operation, unless a continuous suture is employed. (2) Hematemesis, following stomach surgery, due to interference with a pre-existing and unsuspected ulcer. Such cases are extremely rare but a few have been reported thus far, and have been referred to as traumatic causes of hemorrhage.

Neither of the above are what is commonly understood by "postoperative hematemesis." As ordinarily used it is intended to signify the vomiting of blood following operations upon adjacent viscera, but in which the stomach is not involved.

This is a newly described condition and Rodman, in his oration on surgery at the 1900 meeting of the American Medical Association, was one of the first in this country to call attention to it, although Robson, in England, and Von Elsberg and Dieulafoy on the Continent, had already described cases. Seven cases in the experience of the former, and six and seven by the other two, comprised practically all the published cases, at that time. Rodman, by means of letters of inquiry to fifty representative surgeons of America, learned that only eleven cases had been encountered, and these by nine of the men interrogated.

Since then, many additional instances have been reported. Its occurrence in connection with the operation for appendicitis has excited considerable comment and controversy. Post-operative hematemesis has followed a great variety of abdominal operations such as appendicitis, hernias, operations on the liver, gall-bladder or ducts, the opening of abdominal abscesses, hysterectomy, operations on the kidney, ovarian cysts or tumors, extra-uterine pregnancy, ligature of omentum, etc. It also has been known to follow extra-abdominal operations.

Among the various explanations of the occurrence of vomiting of this character are theories of sepsis, embolism, interference with vasomotor control, changes in the blood caused by the absorption of bile, in gall-duct or liver cases, administration of chloroform or manipulation or traumatism of the viscera, especially the omentum. The use of the Trendelenburg position has been presented as a cause.

Rodman made a few experiments upon dogs, in an endeavor to find the exact cause of these hemorrhages, but was unsuccessful, and in his conclusion attributes them to septic conditions which favor the disintegration of the blood corpuscles and predisposes to hemorrhages from the mucous surfaces. He says: "We have in this, I think, a satisfactory explanation of the rare hematemesis following abdominal operations, and have shown that even violent traumatism to the omentum, intestine, spleen, pancreas and liver, did not produce hemorrhage into the stomach in any of the dogs experimented upon and it does not seem unreasonable to suppose that delayed hematemesis will usually depend upon disintegration of the blood due to sepsis." Gerassimowitch in a very recent contribution upon this subject, arrives at practically the same conclusion. He considers the hemorrhage to be due to toxic changes in the blood vessel wall, with a vasomotor paralysis, a local stasis, and a rise of blood pressure, all of which is usually caused by a septic peritonitis.

The exact cause of postoperative hematemesis is very much in doubt, and a question upon which there is need of a great deal more study, before an accurate understanding will be reached.

A SERIES OF NEARLY SIX HUNDRED SPASMS IN AN EPILEPTIC WITHOUT DISTURBANCE OF CONSCIOUSNESS IN THE INTERVALS.

BY L. NEWMARK, M.D.,
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A WOMAN, whom I have known as an epileptic since November, 1894, had her first fit in October, 1892, when she was twenty-four years old. A witness of this and other seizures, says that after the attack, she was demonstratively and indiscriminately affectionate and was confused for about an hour. After this first fit she is reported to have slept almost continuously for two or three days. This postparoxysmal behavior is noteworthy, for while it was common in some degree or other up to the time of the numerous series to be hereinafter described, it was not a feature of the latter.

Many of the fits began with flexion of the forearm, which was followed by a turning of the head and eyes to the left. Of the first or both of these movements, the patient was often conscious; she would then lose her senses and the jerking of the limbs became general. The tongue was bitten in some of the seizures, in others the lower lip or the cheek. She might be warned by a vague nervous feeling in time to seek a couch, or be overcome by the attack without a warning and injure herself in her fall. The fits ocurred at various times of the day or night, as many as five in a single night.

The removal of one of her ovaries in February, 1894, by a gynecologist who alleged that it had undergone cystic degeneration, had no effect whatever on the disease. Bromide of strontium which I prescribed, influenced the frequency of the seizures, but did not suppress them altogether. Under the influence of this drug, the daily dose of which had gradually been increased to seven and a half grams, as long an interval as nine months was achieved between fits. Suspension of the bromide was often promptly followed by a fit, and a diminution of the dose also increased the liability to an attack, so that the patient finally refused to restrict the amount to less than the quantity mentioned. She was disfigured by the acne and her nutrition seemed considerably impaired.

Therefore, when bromipin was introduced, it was hoped that it might have the advantages of bromide without the drawbacks. Accordingly it was substituted for the salt on the first day of June, 1901. At first the dose administered was three teaspoonfuls daily. Seizures ocurring on June 7 and on June 22 and 25, and again on July 24. The dose was gradually increased to three tablespoonfuls daily. To the nervousness and insomnia caused by the change from the bromide to the bromipin, was now added great vexation by her discovery that she was pregnant for the second time. Her tendency to convulsions seemed to be culminating when her husband reported to me that in the night from July 28 to 29 she had had nine seizures, after each of which she was immediately conscious. Such an accumulation of seizures surpassed all her previous experiences, but this was only the prelude to a protracted spectacle.

At noon on July 29 I visited the patient at her residence in the country, about twenty miles from town. I found nothing abnormal in her condition except a slight elevation of temperature (99.8° F.). The resumption of her former dose of bromide was ordered, besides three grams of paraldehyde at night. At a quarter to two in the morning of July 30 the fits began again, and by four o'clock in the afternoon 47 of them had ocurred. They varied in duration between forty-five seconds and two minutes. The second fit followed fifty minutes after the first. Five minutes was the shortest interval noted, and commonly fifteen minutes passed between them. The patient felt a premonitory tingling in the left hand from the tips of the fingers to the wrist. A shriek often announced the fit, which began with a turning of the head and eyes to the left; then there was tonic flexion of the left wrist and elbow, the arm rising somewhat at the shoulder, and the left side of the face contracting. The left lower extremity was extended, the foot turned plantarward and pointed inward.

This tonic stage was followed by violent clonic contractions of the left facial muscles, in which, however, the eyelids on both sides participated, and of the muscles of the left upper extremity, while in the left lower limb only a rapid quivering of the muscles was observed. The right limbs were generally not affected at this time; at the most they were involved in a slight degree in the tonic contraction. As soon as the convulsion ceased, consciousness was found to be undisturbed and the patient denied that it had been altered at all during the seizures.

After the tenth attack she complained of a "limp" feeling in the left arm. Later, both extremities became powerless after the fits, power returning more or less according to the duration of the intervals, to be lost again after a fit, until late in the afternoon a flaccid paralysis of the left limbs became well established. Sensation of all kinds in the paralyzed limbs was perfect. The knee-jerks and ankle-jerks were equal on the two sides and were easily obtained. The same was true of the reflexes in the upper limbs. There was no headache. I was present when the patient ate her supper in the evening of the first day after a severe fit in which the right limbs also jerked somewhat. In the intervals there were often slight spasmodic movements consisting in tonic flection of the left fingers or wrist or (more rarely) of the elbow.

Between four o'cleck in the afternoon of July 30 and the same hour of July 31 the fits numbered 87. The right limbs and the right facial muscles were now involved in the spasms as well as the left, and the patient became deprived of motion in all four limbs. Convulsions, from now on bilateral, followed one another somewhat more rapidly than before, the most rapid succession being after one and after three minutes. After the one hundred and nineteenth seizure, the hypnotics and narcotics and other measures having been unavailing, I gave orders to chloroform her. She was kept under the influence of the chloroform for one hour; forty minutes after its withdrawal the one hundred and twentieth fit was added to the series.

In the twenty-four hours ending at 4 P.M., on August 1, eighty-eight attacks were registered. Between the one hundred and fifty-fourth and one hundred and fifty-fifth a pause of 55 minutes afforded some encouragement, but 90 attacks in the next period of twenty-four hours and 96 in still another, permitted no prediction as to the exhaustion of the discharging material. Between corresponding hours of August 3 and 4 the maximum of frequency was reached, 111 seizures having been recorded in the twenty-four hours.

Her condition had now become most deplorable. As has been said, the limbs were motionless; later with the multiplication of attacks she lost power over the movements of the head and when she was lifted the head wobbled. Then her speech become thick. The indistictness of her articulation increased gradually until at length, not being able to utter the whole words intelligibly, she would laboriously spell them. Finally, on August 4, she could not even raise her eye-lids, the act of swallowing grew more and more difficult, then altogether impossible and she had to be fed by the rectum. At last she lay motionless and speechless, her inertness being interrupted only by the spasms. The limbs were relaxed and remained as the convulsions left them; for instance, the forefingers extended, from pressure of the adducted thumbs against them, while the other fingers preserved the position of interosseal flexion.

Seizures followed one another fast and furiously, as many as five occurring in thirteen minutes; but longer intervals were also observed, as many as fifty and sixty-nine minutes elapsing without an attack. For a time a series of three or four or five attacks in very rapid sequence

would alternate with a relatively long pause so regularly that the course of events was in a measure predictable.

On August 5, in the morning, several intervals of over an hour indicated a lessening of the convulsive tendency. By ten o'clock in the forenoon 54 fits had been counted since the last reckoning at 4 o'clock in the afternoon of the day before: then there were no more until five minutes to six in the evening when the five hundred and seventy-fourth convulsion closed the series.

In the bilateral fits the movements of the left upper extremity generally preceded those of the right a little. Head and eyes invariably turned to the left at the commencement of the tonic stage, the mouth opened, the facial muscles underwent tonic contraction; usually the upper extremities were extended and slightly abducted, the forearms pronated, the wrists flexed, the thumbs without exception turned in and caught between the index and middle finger, while the other fingers were flexed in the metacarpophalangeal joints. The abdominal muscles were also rigid in the tonic stage. The lower limbs were extended and the feet flexed plantarward and turned in. There was nothing faintly resembling the "*arc de cercle.*" The brief tonic phase was followed by clonic contractions in the face and in the upper extremities, succeeding one another at first rapidly, then after longer pauses. The last contraction in the upper limbs equalled in violence the former ones, so that the spasm of these limbs ended with a fling. The twitchings in the nether extremities were quick, short, almost tremor-like. A cork was inserted between the teeth at the approach of a fit; nevertheless the lower lip and the mucosa of the cheek were often bitten and the tongue twice, once quite deeply on the right side. At the close of the clonic spasms the patient emitted a snoring or snorting noise and foamed at the mouth.

The pupils dilated at the onset of an attack. In the intervals they were narrow, but reacted distinctly, until August 4, when reaction to light was hard to determine, clearly because of the tendency to roll the eye-balls upward. On August 2, with a strong endeavor she succeeded once in moving the right big toe and the left forefinger. After her articulation had become difficult a great effort would now and then produce a short, plain utterance, as when at the approach of a fit she called out to some one: "Get off the bed." At no time could a plantar reflex be obtained. From July 30 on, the ankle-jerks and radius and elbow-jerks were very faint, while the knee-jerks in the interval between fits remained brisk. But when the knee-jerks were tested immediately after the fits, that is to say, as soon as the limbs were relaxed, they were found to be absent for about one-half to one minute, and gradually regained their vigor. Sensation, the optic disks, and the urine presented nothing abnormal. In some of the later attacks urine or feces was passed involuntarily. The temperature did not rise above 101° F.; the pulse-rate was rapid, 120 to 140 much of the time, owing, no doubt, to the agitation of the convulsions.

While the attacks were unilateral it was not surprising that they did not affect the mental condition; but the absence of any affection of consciousness or of the intellectual or emotional state, after the body had been racked by hundreds of bilateral convulsions, impressed the observers as something extraordinary, one of them at least to the extent of making him doubt the epileptic nature of the seizures. Even after the most protracted of all the fits, the three hundred and seventy-fourth, which is stated in the nurse's record to have lasted four minutes and which was probably one of those in which the patient bit her tongue, the very vigilant nurse did not observe any delay in the manifestation of consciousness.

Sleep occurred normally or was induced by hypnotics. It was very frequently interrupted by the convulsions, after which the patient was fully awake, and it could at no time be mistaken for an epileptic torpor.

Before the last fit of the series had occurred the power of swallowing had returned in a good measure. The recovery of speech followed. By August 6 she could move the lower limbs and had a good grip with the right hand. As late as August 11 the movements of the left hand were awkward and when the left forefinger was to touch the point of the nose it went wide of the mark. The stereognostic sense was preserved. The right hand had gone through a similar disturbance before it completely recovered. All functions were finally restored. On November 22 the patient had a fit of the kind that prevailed before the series and since then she has been having a few of them in the course of a year, living under the protection of bromide.

To readers of the recent works of L. Pierce Clark and Spratling the foregoing will present nothing new. But to the general medical reader it may be offered as illustrating how multitudinous seizures may fail to impair consciousness in a disease in which the individual attack is usually attended with its disturbance or loss, as exemplifying in a remarkable degree the exhaustion paralysis of epilepsy, and as a warning of the danger which may arise from too rapid a diminution of the sedative control exercised over the epileptic brain by bromide.

Unionism in Medicine.—At a meeting of the Physicians' Club, held October 20, this subject was discussed by several physicians and laymen. Dr. Alfred C. Croftan believes in a united profession, but not in a unionized one. Dr. George F. Butler said the labor unions believed in high wages for their members, but patronized advertising charlatans and encouraged cheap and unskilled labor in the medical profession. The principal objection to the union idea was that it implied the regulation of prices, while nearly all the practitioners who spoke agreed that they were in the profession solely for the benefit of humanity.

THE AGNES MEMORIAL SANATORIUM.

A DESCRIPTION OF A SANATORIUM FOR THE TREATMENT OF PULMONARY TUBERCULOSIS, BUILT BY MR. L. C. PHIPPS, AT DENVER, COL.

BY CARROLL E. EDSON, A.M., M.D.,
AND
W. H. BERGTOLD, M.SC., M.D.,
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The Agnes Memorial Sanatorium has been erected at Denver, Col., by Mr. Lawrence C. Phipps, of Pittsburg, as a memorial to his mother. An attempt has been made to have it in every detail the most thoroughly built and equipped institution possible, and Mr. Phipps has spared no expense to this end. An account of the plans and construction of the sanatorium may therefore be of interest. Mr. Phipps having determined upon building for this memorial a sanatorium for the care of persons of small resources suffering from pulmonary tuberculosis, purchased a large tract of land in the suburbs of Denver. In April, 1902, he laid his plans before the gentlemen whom he later asked to be the trustees of the sanatorium, which is incorporated under the laws

Fig. 1.

General View.

of Colorado as a permanent charity, and before the physicians whom he had selected for his medical board.

The members of the medical board, being asked to make all necessary suggestions as to the details and requirements of such a sanatorium, gave their enthusiastic attention to this work and recommended: That the institution be conducted as a closed sanatorium for the open-air treatment of persons of small means suffering from incipient pulmonary tuberculosis; that it be, not a home or refuge, but restricted to cases of early disease in persons whose return to wage-earning is urgent, and whose condition offers prospect of such arrest of disease or amelioration within a short period as to permit of such return; that the institution should be planned to give such persons, for a period of six months or so, the very best opportunity for outdoor living, physical quiet, abundant nourishment and medical oversight at a small cost; that the sanatorium also be not only therapeutic, but educational, the patients being taught how to take proper care of themselves after leaving.

After long and careful consideration, the medical board reported, on November 14, 1902, to Mr. Phipps detailed suggestions and specifications as to the arrangement and construction of the buildings. These recommendations have been closely followed in the main, Mr. Phipps making from time to time some changes in the way of addition to the simpler ideas of the board, but in no way affecting the general plan as first laid down. The specifications were given to the architects, Messrs. Gove & Walsh, of Denver, in November, 1902. These gentlemen have in every way most cordially cooperated with the medical board, and subordinated their architectual ideals at all times to the medical demands.

During the winter of 1902-3, the detailed plans were worked out by the architects and physicians with great minuteness, and ground was broken in May, 1903.

The erection of the buildings since then has been under the direction and in the hands of the building committee of the board of trustees, which was organized in January of that year.

The land comprises forty acres, upon high ground, seven miles east of the city of Denver, and well situated so as to be wholly free from smoke or future crowding. One hundred and twenty acres additional to the east and south are owned by Mr. Phipps, and while at present used as a ranch in connection with the sanatorium, may be drawn upon for future needs. The site is on the line of the electric cars, giving easy access from the city, and the elevated ground commands an uninterrupted view of the mountain range to the west—one hundred and fifty miles from Pike's Peak to Long's Peak, and of the plains to the east. The view from the tower of the administration building extends over more territory than the entire State of Massachusetts. The land slopes gently to the east, south and west, and is the usual prairie oversoil with a gravelly subsoil giving good drainage. The water supply is ample, furnished by the excellent city water of Denver, and by an artesian well 750 feet deep, upon the grounds.

It was decided for reasons of economy in administration, especially of ease of heating in winter, to adopt the pavilion system at first, and to increase the capacity, if desired later, by the erection of cottages from time to time. The buildings are now planned to accommodate eighty patients; the administration plant, kitchen, etc., being arranged for an increase to one hundred and fifty patients, which is considered the maximum number desirable under one control.

There are at present five buildings—an administration house, two pavilions for patients, a medical building and a power and laundry plant. The main buildings are in a line, the administration building between the two pavilions and a little behind them, while the medical building is to the north of the north pavilion. The power plant is 300 feet east of the rear of the main building.

The orientation was most carefully considered

in regard to sun and wind, both the prevailing and the storm wind, and in view of the needs of both winter and summer life. The buildings face west-southwest, save the medical building which is squarely on the compass. This arrangement was expected, as it has been found to do, to give every room direct sunlight every day in the year, and to provide sunlight on the verandas of the pavilions all day in winter, and in summer shade from the warm Colorado sun. The working out of this arrangement took much time, but has been very successful, as will be shown in the detailed description of the sleeping pavilions.

The buildings are all of brick, covered with cement, and roofed with red tiles, the general effect being that of the Spanish Mission so well suited to the western sun and landscape. The buildings are all connected by open cloisters, and below ground by a dry, well-lighted subway for use in administration work or very stormy weather. There is a full cemented and plastered cellar under every building.

The lighting is by electricity, generated in the

Fig. 2.

Administration Building, showing Sun Rooms and Open Cloister.

power plant, and the heating is the "direct-indirect" system of air over steam coils, to be described in connection with the pavilions. In addition, all rooms used for general assembling have open fireplaces.

The Administration Building, in the center, is 139 by 40 feet, and three stories high, with a two-story ell 51 feet deep. It contains the offices, the library, parlors and dining-room for the patients, the kitchen and pantries, and the living apartments for all the employees, from the Medical Director down.

The cloister connecting the pavilions runs directly in front of the main building and is here shut off by glass doors to make a vestibule. Entering the center hall, the dining-room, 60 by 40 feet, is on the right, where it has the full benefit of the morning sun on the east and south, the afternoon sun being to some extent shaded by the cloister on the west side. On the left are two reception rooms, 15 by 18 feet, in which patients may meet their callers, it being the intention to allow no visiting in the sleeping pavilions. Across the side hall on the east from the reception rooms are the office for the clerk, where patients will transact their business and receive mail, and the private office of the executive superintendent. The clerk's office opens also by a door to the rear of the building, giving easy access for delivery men to present bills of lading, etc., or for outdoor employees to do business without coming through the house. The north end of the first floor is given to the library, 20 by 40 feet. In the rear wing are the superintendent's family dining-room, the sewing-rooms, kitchen, pantries, refrigerator rooms and a dining-room and sitting-room for the servants. In the basement of this wing are the vegetable cellars, bake-ovens for bread, and the storerooms, entered from outside on the north.

The second floor is occupied on the north wing by the superintendent's and house physicians' rooms, on the south wing by the linen-rooms, sewing-rooms and quarters for the matron, housekeeper and nurses. In the second story of the rear wing are sleeping rooms for the servants, the necessary attempt at separation of the sexes being made by dividing the corridor by a solid wall, so that the women's rooms are wholly apart from the men's.

The third story of the main building was added for architectural effect, and advantage was taken to use the south end for an assembly hall, 40 by 60 feet. This room is one and one-half stories high, the ceiling being vaulted to the roof—the double row of windows and dormers giving ample ventilation. It will serve for occasional lectures and concerts. Objection may be made to this room being on the third floor, but the stairs throughout the sanatorium are of very easy rise and tread, and a patient unable to go up to the hall ought not to be at any entertainment.

The north end of the third floor gives extra room for an increase in the number of employees.

In front of the administration building, separated from it by the cloister, are two large sun-rooms, 38 by 24 feet, for use in severe cold or occasional hard storms in winter when a porch is too exposed. The sides are wholly of glass in French windows, and the rooms are shut from the open cloisters by glass folding doors. The rooms are thus open on all sides to light and sun, while they may be protected from the wind wholly or on any side as may be needed. They are amply ventilated aside from the window openings.

The cloisters running between all the buildings are covered passages with wide open arches of seven feet span. The piers are less than three feet wide. Throughout, these cloisters are wholly open, giving free circulation of air. The purpose of the medical board, throughout all the construction, was to do away as far as possible with confining walls, and to secure the greatest abundance of light and air, at all times. In case of severe storm, the corridors under the cloisters

may be used by the more delicate patients in passing from the pavilions to the dining-room. These passages are dry and well lighted, and serve to carry the steam, water and wire pipes.

The Pavilions, which are the essential working parts of the institution, are on either side of the main building, 70 feet distant each, and 50 feet in advance. They are 160 by 65 feet, counterparts, each two stories high, the upper story in all details like the lower. Each pavilion accommodates forty patients.

The bedrooms are all of the same size and arrangement; 11 feet wide by 16 feet deep, a closet three feet deep being taken off at one side of the inner end, making the main room 11 by 13 feet. All the rooms are 11 feet high. Over the door leading to the ante-hall is a transom serving to light the corridor, which is 8 feet wide, and to allow cross airing if wanted. Opposite this door is a window 38 by 78 inches, and next the window a door opens on to the veranda. This door is glassed, and is 4 by 7 feet, with a glass

Fig. 3.

Pavilion (north).

light above, 41 by 20 inches, so that, practically, the whole veranda end of the room is window, admitting abundant sunlight, which strikes completely across the floor of every room at some time during the day.

It will be noticed on the plan that the window of each room is opposite the inner door and transom, permitting full airing across the room, but leaving the bed, which stands opposite the outer door, out of the draft, also, that the doors of rooms across the hall are not directly opposite each other, which prevents an undue directness of draft and gives better general ventilation through the hall. This ample means of airing the rooms is, however, only supplementary, the system of heating and ventilation securing a supply of 10,000 cubic feet of air per hour, without the use of door or window. This is obtained by means of the direct-indirect system, so-called, of intake, separate for each room, allows the fresh outside air to pass over through a steam coil boxed under the window inside, and so up into the room. On the side wall, near the base board, is a ventilating register which opens to a flue passing separately for each room to the attic floor, where these flues open into a large shaft around a steam drum. The air suction is steady and sufficient to ventilate the rooms thoroughly and continuously.

The rooms are lighted by electricity, and the closet by globes automatically lighted when its door is opened.

Each floor has a lavatory suite, on the east side at the end nearest the administration building, which is tiled throughout with white porcelain. There are in each suite three tubs, a shower and a sitz-bath, and three water-closet seats, each in a separate room. A chambermaids' workroom, also tiled, and small linen closet complete the equipment on each floor.

The plumbing throughout the whole plant is open and exposed.

The stairways are in the middle of the east side, and are of very easy ascent, the rise and tread being 6½ and 12 inches, respectively. The floors throughout are of hard pine, filled and waterproofed, and the ceilings and walls are finished with a washable surface. All corners and angles in the building are rounded and concaved in the plastering. The dividing walls are double, and made sound-proof by zigzag felting. The bed spaces in adjoining rooms are never against a common wall.

The special feature of importance, however, in the pavilions is the veranda which surrounds the building on all sides. These verandas are nine feet wide, and are intended to serve as sleeping porches at night as well as piazzas by day. The arches, which carry the roof of the building and, therefore, appear structurally as if the outside wall, are very wide and cut clear to the ceiling. The arch space is 12 feet, and the intervening column is but eight inches in diameter. Its corners are cut away, as well as the outer edges of all the arches, so that the least possible obstruction is put in the way of sunlight. The columns, too, it will be noticed, are placed opposite the intervening walls between rooms, so that the whole of every window and door is directly behind the full opening of an archway. In this way no obstruction of light or air is given any room.

A canvas partition is fastened to the wall between each two rooms, and at night is drawn out to the column between the arches, dividing the veranda into porches, 12 by 9 feet; one for each room, giving privacy for the patients, whose beds are rolled from the room through the wide door out upon the veranda. The canvas screens are only eight feet high, so that there is free circulation of air above them along the veranda. Not only do these porches serve as sleeping spaces at night, but should any patient be obliged to keep his bed for a few days for any reason, the screens may be drawn out separating his porch from the general veranda, giving quiet and isolation and permitting him nevertheless to have his outdoor life uninterrupted. The screens may also serve

as partial wind breaks, in case of heavy wind down the veranda, though this protection is secured by the tower corners. At each corner of the pavilion, the veranda is widened two feet into the tower, the arches here are fitted with glass doors, which can be closed, giving a sheltered corner room 11 feet square, open on the two inner sides. These closed corners serve well to shut off the wind down the verandas.

Save in the most rigorous weather for a few nights in the winter, patients may thus sleep out all the year round.

The south end porches on which no rooms open give very sunny sitting places in winter, while the north ends similarly arranged give shady spaces in summer. As the patients here will not go away in the sumer, it was important to provide not only for sun and shelter in winter, but also for shade and coolness from the warmth of the summer midday. The time spent in planning this orientation was well repaid by the working results obtained.

The objection made to verandas around buildings, or in front of sleeping rooms, in most essays upon sanatorium construction, was not unnoticed by the medical board in planning these pavilions. In the intense sunlight of the unclouded sky in Colorado shade is desirable for some patients at all times, and for all during the midday in summer. The diffusion of light being so great, directness is less constantly needed, but it has been found that the porches about the pavilions do not shade the rooms at all too much. The direct sunlight strikes clear across every room at some time in the day. During the winter, the lower sun pours straight into the verandas all day, while in summer it is high enough so that the porches are shady save in the morning and evening.

Fig. 4.

Medical Building—Cloister and Pavilion.

The furniture of each room is simple and, so far as possible, without anything to catch dust; it consists of an enamel bed, which can be rolled through the doors upon the porch, an enamel washstand, a dresser, a small table and a chair. The floors are bare but for a small rug at the bedside. A call bell communicating with the nurses' room and light-button are at the head of the bed, and on the veranda a drop wire gives opportunity for light in each porch section in case of need when the patient is sleeping out. During most of the time, the bedroom will really serve only as a comfortable dressing room.

The Medical Building, which faces on the four points of the compass, is at an angle with the north pavilion, and thus falls back out of view in the full face of the general plan. It serves for the scientific work of the institution and for a hospital for any cases of acute illness which may arise and call for special nursing. It is 50 by 57 feet. The first floor is given to the scientific work. A reception room, 15 by 17 feet, is entered from the hall on the left. This opens into the consultation room, 30 by 15 feet, where the physicians have their desks, records and library. From this room opens along the north side of the building, a series of rooms: First, a small, quiet room for chest and physical examinations, then a room for throat treatment, and, lastly, on the northeast corner, a clinical laboratory, 18 by 15 feet. These rooms can be entered each from the hall or directly from each other. The throat and chest rooms were made separate from the consultation room to allow undisturbed examination or treatment of two patients at the same time.

Fig. 5.

Sleeping Porch.
At time of taking photograph the canvas partitions were not in place.

The clinical laboratory has a large north window for microscopical work, sinks and chemical hoods, and is thoroughly equipped with every appliance for scientific clinical work. In connection with the laboratory, there is in the basement a large, well-ventilated room for experimental work on pigs or rabbits, and a small autopsy room, which, it is hoped, may never be used.

A room arranged for X-ray work and a commodious dark room for photographic work, fill the eastern side of the building, and a small drug room for medicines and supplies completes the first floor.

A stairway made especially wide for carrying

a stretcher leads to the second floor, which is for hospital uses. A small diet kitchen, a small operating room, sufficient for such emergency work as may arise, are on the north side. A commodious bathroom is fitted with a tub in the center of the room for convenience of the nurse getting at the patient. There are six rooms, 11 by 15 feet, for patients, one being arranged for isolation in case of need. On the south side, built out over the cloister, is a large sun room for semi-convalescent patients, and the roof of the cloister beyond offers a still more open place for reclining when returning strength permits.

The power plant is 300 feet from the rear of the main building. It is 113 by 40 feet, with an ell 59 by 28 for the laundry. The main building contains the boilers and steam plant, electric generating dynamos, fire pumps and refrigerating machine. The laundry room is equipped with modern machinery, all the laundry material being sterilized by steam before delivery to the laundry room proper. The chimney stack is 100 feet high.

In connection with this building is an incinerating furnace for sputum and garbage.

The drainage of the institution is carried for the present, as the city sewers do not yet extend to the site of the sanatorium, to the east of the buildings in two sets of three series of settling cess-pools, which are dug deep into the loose gravel, draining away from the institution. The outflow is ample, as proved by tests.

APPENDIX I.

The Report of the Medical Board, made November 14, 1902, upon which the plans were drawn:

The Medical Committee, appointed by Mr. L. C. Phipps, October 27, 1902, to examine the plans presented, and to make all necessary suggestions as to the requirements of a sanatorium for tubercular patients, respectfully submit the following suggestions:

1. That the institution be considered a "closed sanatorium," non-sectarian, admitting both sexes.

2. That a uniform rate be charged, this rate to include board, lodging, and ordinary medical attendance, but not to include medicines, laundry, special operative work or special nursing.

3. That the sanatorium in no sense be considered a "consumptives' home," in the ordinary acceptance of the term. It should be an institution where patients with slight disease (incipient cases), can be sent with a hope of cure, or of such amelioration of symptoms that they may become wage earners again.

4. That it be, moreover, an educational institution where the patients are taught the simple but important laws of hygienic living, with special reference to their disease and the protection of others.

5. That the sanatorium be for the open-air treatment of patients, that every part should be extremely well and independently ventilated, readily cleansible without raising dust, as regards the patients' quarters, freely open to the sunshine, while sheltered from the wind.

6. That the sanatorium be built on the "pavilion plan," with an annexed "cottage system" later if deemed desirable."

7. That the first buildings be planned to accommodate not over eighty patients, forty to each two-story pavilion, the upper floor of one pavilion to be devoted exclusively to women, namely, 20. The maximum capacity of dining-room and kitchen to be built for the accommodation of 125 patients.

8. The Committee would advise that the sanatorium include the following buildings: (1) One administration building, (2) two pavilions, (3) medical building, (4) infirmary, (5) building for laundry, lighting, and heating plants, (6) amusement pavilion, (7) medical director's residence, (8) stable, (9) cottages when required.

9. The Administration Building should have the following rooms: *First Floor.*—Two reception rooms, one general dining-room, staff dining-room, superintendent's office, clerk's office, library, serving-room, kitchen. Cold storage for meats, vegetables, milk, butter. Small dining-room for help. *Second Floor.*—One matron's sitting-room, one matron's sleeping-room, one linen and sewing-room, one superintendent's room, nurses' rooms, rooms for superior help.

10. *Pavilions.*—The main front of the pavilions should face southwest. Each pavilion should not be over two stories high, with covered verandas on each floor around entire building; each floor to have sleeping rooms for twenty patients; each floor to have a bathroom containing three bathtubs and bowls, three seats, two urinals and one sitz-bath; each floor to have a closet for slop-hopper, with hot and cold water; each floor to have a linen closet, etc.; each floor to have a closet for soiled linen basket; each floor to have provision for collecting sputum cups; each floor to have a closet for brooms or mops; each pavilion to be provided with corridors not less than nine feet wide, amply lighted and ventilated.

11. *Medical Building—First Floor.*—One reception room for patients (to have double doors between reception and consultation rooms); one consultation room, with doors like the preceding; one chest examination room; one closet for washbowl, one nose and throat room, one X-ray and photographic room, one clinical laboratory, and one drug room (both to have running water). *Second Floor.*—One house medical officers' sleeping-rooms, house medical officers' sitting-rooms; extra bedrooms for visiting physicians, one toilet room with bath, and seat.

12. *Hospital Building—One Story.*—One nurses' room, one reception room, ten sleeping rooms, to open on covered veranda, one to be arranged for isolation room; one toilet room, with bath, bowl and seat; one diet kitchen, one linen closet, one closet for slop-hopper and cleaning rags, one operating room (small), one mortuary in basement.

13. *Amusement Pavilion.*—To be a separate pavilion, something after the order of the pavilion at City Park. A large open pavilion capable of being closed for entertainments, if necessary, by means of a system of windows. At each end of the pavilion would suggest having a room, one for men, one for women. Also to have one toilet room for men and one for women.

14. Laundry, lighting, power, heating, and disinfecting plant all included under one roof. This building to be as far away from main buildings as compatible with efficient service. Laundry to be furnished with most approved machinery. The disinfection plant to be in a separate room, but to communicate with laundry.

15. *Power Plant and Stable.*—To be a suitable distance from buildings.

16. Every part of the sanatorium should be so constructed as to facilitate cleaning; all corners should be rounded, and unnecessary ledges avoided. All construction to be of the simplest durable nature. A well-lighted, dry cellar under all large buildings, with trunk rooms and storerooms. A brick conduit from power plant to main buildings for heating pipes, etc., large enough to admit the passage of a man throughout its course. The stairs in the different buildings to be built wide, having easy treads and rises. Each building to be provided with an electric call system in each room and on each floor. All buildings to be wired for telephone communication with administration building and medical building. Full fire protection on each floor for every building.

17. All windows and doors should be so constructed as not to clatter when the wind blows, or admit drafts from any possible shrinkage of woodwork after construction. Window sills to be rounded. Each room to have one door and one large window opening on to the veranda. The door should be wide enough to roll a bed through upon the veranda. Rooms should not be less than 12 by 14 feet; height of rooms on first floor not less than 10½ feet; height of rooms on second floor not less than 10 feet. All woodwork to be of hardwood, well filled and varnished or painted. Each room to have a closet, the floor of which should not be sunk below the floor of the room, and the interior to be made as carefully as that of the room itself. No transoms over the inside doors. No plumbing in rooms.

18. Verandas and covered balconies are an essential part of every sanatorium for consumptives, so arranged as not to darken the patients' rooms. To properly shelter the patients, the veranda should be 10 feet wide. The veranda floors should be so constructed as to properly shed water. Each sleeping-room to have a corresponding amount of veranda space, such space being separable by a properly adjusted canvas wall or curtain, stored in wall niche. The veranda front to have a solid wall with coping 2½ or 3 feet high. All doors and windows to be screened. All floors to be double floors of polished hardwood, either varnished, waxed or covered with a paraffin composition. Cracks and joints should be, as far as possible, avoided. Floors to be deadened. In bathrooms, washrooms, laboratory, kitchen, laundry, disinfecting room and corridors connecting buildings, cement, artificial stone, vitreous tiles, or "torgament" may be used, first having the space between beams filled with concrete.

19. All walls should be extra thick and deadened to prevent one patient from being disturbed by the coughing of another. Walls and ceilings must be of washable surface.

20. Artificial lighting should be by electricity, as other methods add to atmospheric impurity. All buildings should be wired for electricity and piped for gas in all rooms but the sleeping rooms.

21. Ventilation of rooms should be as perfect as possible. Each person should receive not less than 10,000 cubic feet of fresh air per hour while in a closed room. The impure air removed by shafts and heated central well.

22. The committee would recommend indirect heating, as this system seems to be the most efficacious in removing impure air and admitting fresh air. Hot-water heating is worthy consideration. All general gathering rooms to have open fire places.

23. The water-carriage system, with suitable cesspools. The water-pressure must be high enough to properly flush all pipes. If possible connect with city system. Provision must be made for living quarters for help. Sexes to be separated.

APPENDIX II.

Board of Trustees of the Agnes Memorial Sanatorium.—C. S. Morey, President; John Campion, W. S. Cheesman, T. S. Dines, C. J. Hughes, Jr., J. G. McMurtry, Treasurer; J. H. Sawyer, Secretary.

Medical Board of the Agnes Memorial Sanatorium.—Arnold Stedman, M.D., Chairman; W. H. Bergtold, M.D., Carroll E. Edson, M.D., J. A. Wilder, M.D., Secretary; L. B. Lockard, M.D.; G. W. Holden, M.D., Superintendent and Medical Director.

MEDICAL PROGRESS.

MEDICINE.

Determination of Different Forms of Albumin in Urine.—The ingenious method of determining the percentage of the different forms of albumin in nephritic urine, devised by A. Oswald (*Münch. med. Woch.*, August 23, 1904) depends upon the addition of various amounts of saturated solution of ammonium sulphate. Four Esbach albuminometers are selected and marked A, B, C, and D. In A, the entire amount of albumin is precipitated in the usual way with Esbach's reagent. The remaining tubes are then filled with urine up to the mark U; tube B then receives 2.8 c.c. of ammonium sulphate solution to 7.2 c.c. of urine, tube C 3.6 c.c. to 6.4 c.c. and tube D 5 c.c. to 5 c.c. Each tube is allowed to stand for twenty-four hours and the

precipitate then collected on a filter, dissolved in water poured into an Esbach tube and precipitated for quantitative determination with Esbach's reagent. The precipitate derived from tube B will equal the amount of fibrinogen or fibrinoglobulin, that from tube C minus B, the percentage of euglobulin, tube D minus C will equal the percentage of pseudoglobulin while the proportion of serum albumin is obtained by subtracting D from A. In a number of cases of nephritis examined serum albumin was always most abundant, then came pseudoglobulin and finally euglobulin, while fibrinogen was absent in all.

Complications of Polyarticular Rheumatism.—In the analysis of a large number of cases, P. Harrass (*Münch. med. Woch.*, August 30, 1904) finds that about 2.2 per cent. of all hospital cases are admitted for articular rheumatism. The greatest frequency is noticed between sixteen and twenty years and the sexes are affected about equally. In 26 per cent. an angina preceded the attack and recurrences were noticed in 39.7 per cent. Complications were observed in 57 per cent., but more frequently among women than men. The great majority of complications (51.7 per cent.) were cardiac and mitral insufficiency was the most frequent lesion observed. Pericarditis was observed in 1.7 per cent, less frequently erythema nodosum, pneumonia, chorea minor, psychical disturbances and nephritis. The mortality was 1.7 per cent., the cause of death being pneumonia and nephritis secondary to loss of compensation.

Paroxysmal Hemoglobinuria.—The hemolysis seen in paroxysmal hemoglobinuria is explained by V. Donath and K. Landsteiner (*Münch. med. Woch.*, September 6, 1904) as due to the absorption of a toxic body when the blood is cooled off. The solution of the cells then occurs when the blood is again warmed through the agency of a complement which is also present in normal serum. The process can be easily imitated by cooling and again warming the blood in a test-tube.

Alkaptonuria.—A masked case of alkaptonuria was detected by O. Schumm (*Münch. med. Woch.*, September 6, 1904) in a young man, twenty years old, whose antecedents and family history were absolutely negative. Though the patient's family was large, only one sister also excreted alkapton, without being in any way aware of the condition. The specific gravity of the urine varied between 1.021 and 1.030, polarized light was not affected and yeast did not cause fermentation. Indican, urobilin and uric acid were present in normal quantities. Immediately after passing, the urine was acid, and of normal yellow color, but it soon turned brown, even before ammoniacal fermentation set in. Upon the addition of lye, the upper portion became brown in a few seconds. Alkaline copper and ammoniacal silver solution were reduced with heat and on boiling with Nylander's solution, a brown precipitate was thrown down. Dilute chloride of iron added drop by drop, gives a transient blue color. Alkapton may be isolated by adding one-tenth the quantity of 20 per cent. sulphuric acid, evaporating to one-tenth the volume and extracting the residue with ether. On distilling the ether, a syrupy residue will remain, which soon crystallizes and from which homogentisic acid can easily be obtained pure. Even the excretion of as much as 80 grams of this acid daily did not interfere with the patient's well-being. According to modern views, alkapton is a decomposition product of albumin, which is still further burnt up in the normal individuals, but in certain rare cases, is excreted as such, without actually constituting a disease. Increased ingestion of albumin will thus increase the excretion of homogentisic acid. Rarely the condition is but temporary, as with some febrile disturbance.

OBSTETRICS AND GYNECOLOGY.

Results of Induced Labor.—Induction of premature labor in case of pelvic contraction has been condemned by many obstetricians because of the high fetal mortality. R. C. Norris (*Am. Jour. Obstet.*, September, 1904) is in accord with such teaching when the true conjugate is 7.5 cm. or less in a generally contracted pelvis or 7 cm. in the flat pelvis. When the conjugate is between 8 cm. and 10 cm., skillfully induced labor at the latest permissible period of pregnancy, has an important place. A delayed labor with the history of a previous difficult forceps delivery at term and even the avoidance of perineal lacerations likely to follow a breech extraction in a first labor with a normal pelvis, have been advanced as justifiable indications for Cæsarean section. The proper indication of labor finds its field of usefulness in almost all of these cases without resorting to Cæsarean section. To accomplish the best results after the induction of premature labor, the usual causes of failure, as far as possible, must be eliminated. These are the interruption of pregnancy earlier than the degree of contraction demands, or at too late a period, necessitating operative delivery of a premature child. An accurate determination of the degree of prematurity is important. The possibility of conception having occurred in the premenstrual and not in the usual postmenstrual days, may be a source of error of two to three weeks. When in doubt, if the relative size of the child's head will permit it, the induction of labor should be postponed a week or ten days from the date selected. Instrumental methods for determining the relative size of the head to the pelvis are inaccurate. Manual engagement of the head depends for accuracy upon individual skill and experience but is the most reliable. The average infant's biparietal diameter at term is 8.25 cm., a diameter that will usually pass a conjugate of 8 cm. The most satisfactory method of inducing labor consists in the proper introduction of a bougie, dilatation of a cervix, if necessary, and then the insertion of the largest size Voorhees bag upon the stem of which more or less continuous traction is made by means of a cord and weight. When the bag can be drawn through the cervix with gentle traction, instrumental delivery or version and extraction, if indicated, can be immediately performed when necessary.

Bathing During Menstruation.—It is the traditional belief of both profession and laity that it is advisable to omit bathing during the menstrual period. Customs among primitive people in regard to the bath during menstruation are much the same as those generally in vogue among the women of to-day. During the past ten years many physicians have either advised or sanctioned some form of bathing during this period. J. C. Edgar (*Am. Jour. Obst.*, September, 1904), believes, that women of ordinary strength and health are able to bathe during menstruation, following certain simple precautions, not only without any injury but with marked addition to personal comfort and benefit to general health. While there may be a certain amount of risk of infection of the uterus in tub bathing, the great harm obtained is by chilling

of the surface in improperly applied baths. All forms of bathing during the menstrual period are largely a matter of habit and usually can be acquired by cautious and gentle progression. Surf bathing, when the body surface remains chilled for some time, should always be excepted. A daily tepid sponge bath (85° to 92° F.) during the menstrual period is not only a harmless proceeding, but is demanded by the rules of hygiene. After the establishment of the menstrual flow, on the second or third day, a tepid tub or shower bath is a perfectly safe practice and can be acquired without risk in most women.

PHYSIOLOGY.

Absorption of Foreign Albumin from the Gastro-Intestinal Tract.—It is a strange fact, discovered by D. Ganghofer and V. Langer (*Münch. med. Woch.*, August 23, 1904), that foreign albumin introduced by mouth is partially absorbed as such by the gastro-intestinal tract of young animals up to the end of the first week of life. The same observation has been made upon the human infant for a somewhat longer period of time. The alimentary tract of older animals is impervious toward albumin of other species unless an excessive amount is ingested or the lining epithelum is the seat of an anatomical lesson or a mere functional disturbance. The absorption of unaltered albumin is followed by the production of antibodies which may be responsible for the general emaciation always noticed. The conclusions to be derived from these observations are that in very young infants and older children suffering from gastro-intestinal disturbance, only human albumin will be tolerated.

GENITO-URINARY AND SKIN DISEASES.

Etiology of Eczema.—Despite all that has been written and said about eczema, the etiology of this most-common skin disease is still obscure. E. v. Düiring (*Münch. med. Woch.*, Sept. 6, 1904) cannot share the view of Unna, that eczema is primarily a parasitic disease for the vesicles of the early stages have time and time again been proven sterile and even inveterate cases will sometimes heal with treatment which is directly opposed to all rules of asepsis. Most likely a specific predisposition combined with a local or general irritation are the underlying causes and more good can generally be accomplished by attention to diet and mode of life than by antiseptic local dressings. There is a distinct relationship between skin and the internal organs, thus an eczema of the head, when treated energetically will sometimes be followed by compensatory hyperemia of the brain, manifesting itself in convulsions, and an intercurrent attack of diarrhea, will frequently improve an eczema of the body.

THERAPEUTICS.

Treatment of Insipid Diabetes.—In a typical severe case of diabetes insipidus, B. Stein (*Münch. med. Woch.*, September 6, 1904) has tried a number of different therapeutic measures with the following results: Change in diet did not decrease the amount of urine while it made the patient very uncomfortable. Decreasing the amount of fluid ingested was also a failure since severe nausea, vertigo and weak pulse were the result and the amount of urine dropped only from ten to eight liters. Cold baths were refreshing but warm water, applied in the hopes of stimulating diaphoresis, was not borne well. Preparations of valerian, large doses of antipyrin, the bromides, arsenic, sodium kakodylate, mercury, and the iodides did not make a lasting impression upon the disease, but good results were finally seen from small, gradually increasing doses of strychnine, injected subcutaneously. Polyuria and polydipsia disappeared in three weeks and the patient rapidly gained in weight.

PATHOLOGY AND BACTERIOLOGY.

Action of Fluorescent Substances on Normal and Hemolytic Sera.—If rabbit serum which dissolves the erythrocytes of some other blood, be mixed with a small amount of eosin solution and exposed to sunlight, it will completely lose its hemolytic properties in a short time while control mixture not exposed to the light, or serum exposed to light but not containing any eosin, will behave normally. If normal rabbit serum is added to the tubes which contain eosin and which have been exposed to light, hemolysis will eventually take place, showing that the expanse has destroyed the complement of the serum without affecting the amboceptors. The complements are therefore influenced in the same way as the toxins of diphtheria and tetanus bacilli. It is probable that the complements will also be destroyed in the circulating blood under the influence of eosin and sunlight.

Oxidizing Action of Fluorescent Substances.—According to D. Edlefsen (*Münch. med. Woch.*, September 6, 1904) the peculiar germicidal action of fluorescing substance is solely due to oxidation. The chemical best suited to prove this is beta-naphthol, since it is easily oxidized and its oxidation product can be readily detected. If quinine or eosin is mixed with beta-naphthol solution and then exposed to sunlight, the naphthol will be oxidized into beta-naphthochinon. This will give a bluish-green color if a few drops of resorcin solution and ammonia are added, changing into cherry red with nitric acid. A similar mixture kept in the dark even for days does not give this reaction. One of the strongest fluorescing substances and hence, oxidizing agents in sunlight, is azoresorufin.

SURGERY.

Prevention of Post-Operative Intestinal Paresis.—The behavior of the bowels the first few days after laparotomy is always a source of concern to the surgeon. D. H. Craig (*Am. Jour. Obstet.*, September, 1904) advocates the use of eserine salicylate hypodermatically in all cases of intra-abdominal operation Belonging to the groups of spinal depressants, eserine lessens or inhibits the inhibiting impulses ordinarily sent to the intestinal musculature through the splanchnics as a reflex result of peripheral irritation. If given in full dose (one-thirtieth gr.) at the time or immediately after opening the abdomen, the muscular and nervous mechanism of the intestine will be left in practically the same condition as before operation, in this way intestinal paresis is prevented. In many cases the bowels move in from twelve to forty-eight hours after operation, an absence of any movement during this period indicates thoroughness of preparation. A patient should be carefully watched for signs of intestinal paresis after the administration of eserine for the drug may fail because of poor preparation, too old a preparation, or because of idiosyncrasy on the part of the patient. Eserine cannot be expected to wholly overcome the paresis due to sepsis. When the drug fails, the possibility of mechanical obstruction should be borne in mind.

The Medical News.

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OF MEDICAL SCIENCE.

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PRACTICAL DIPHTHERIA SERUM THERAPY.

There are very few physicians now and fortunately the number is growing ever fewer who are not fully convinced of the efficacy of diphtheria antitoxin for the treatment of what used to be considered the most fatal of children's diseases.

Notwithstanding the almost universal agreement as regards the use of serum there are still marked divergences of opinion as to the amount to be given, the repetition of the dose, the necessity for other treatment and the care of convalescence. Not a little light was thrown on all these questions at the recent meeting of the New York State Medical Association, as can be seen from the proceedings printed in this week's Medical News (see page 858). There have been other contributions to the subject, a review of which in connection with the discussion of last week may prove of special interest at this time when we are entering on the period of greatest seasonal frequency of the disease.

All are agreed now that the initial dose of the diphtheria antitoxin must be much larger than was suggested a few years ago. One thousand five hundred antitoxic units was considered a greater dose than was needed in the average case five years ago. The American Pediatric Society's committee limited the first dose except in large children and severe cases to 2,000 units. Now every one commends 3,000 units as the least that should be given and 5,000 units if the case presents any serious feature. Even from this point the standard has an upward rather than a downward tendency. 10,000 units are suggested as not too large in severe laryngeal cases, or at least 5,000 units repeated in a few hours.

The question of dosage does not depend so much on the age of the child as on the severity of the symptoms. Even for an infant, if there are threatening symptoms of extensive nasal or laryngeal involvement, 5,000 antitoxic units should be given at once, to be repeated at the end of twelve hours if there is not a prompt abatement of the symptoms. Repetitions of the original dose depend entirely on the effect that is secured. If there is a drop in temperature, relief of breathing, a quieter pulse and generally a more comfortable condition, especially if the membrane assumes a granular appearance and begins to disintegrate or clear up, the dose need not be repeated. If these favorable changes are not noted, however, then delay beyond twelve hours in renewing the attempt to neutralize the diphtheria toxins present in the circulation is of serious significance and means the assumption of an undue responsibility on the part of the physician. If in doubt when there has been but a partial reaction and only a slight remission of symptoms, it is better to be sure than sorry and repeat the dose.

For the repetition of injections the same rule holds as with regard to the administration of the initial dose. Whenever there is a well grounded suspicion of the presence of diphtheria, especially if it occur in a child not over strong or if the symptoms are at all threatening, antitoxin should be administered at once without waiting for the bacteriological diagnosis. Even if the affection proves to be non-diphtheritic, no possible harm can be done and the contingency of subsequent urticaria cannot be permitted to weigh in the balance against the immense advantage of the early administration of antitoxin in genuine diphtheria. Even in severe streptococcic infections the diphtheria serum will not hamper the natural power of resistance, and while there is no doubt that streptococci may cause serious damage to the kidney, there is practically universal agreement that the serum will not add to the danger of nephritis.

As regards other treatment in addition to antitoxin injections there is some difference of opinion with the weight of authority in favor of not using local treatment especially if it tends to lessen the dependence on antitoxin as the main stay in the disease or if by mechanically modifying the appearance of the membrane it masks the progress of the case. As regards general supporting treatment there is no hesitation or disagreement. The resistive vitality must be kept up by means of strychnine or iron and the appetite must be encouraged in every way. Patients should be tempted at two hour intervals when not asleep, to take milk and other easily digestible foods. Plenty of liquid must be given, and this is frequently omitted because of difficulty in swallowing. Neglect of this, however, leaves the system with accumulating toxins when they might be washed out through the kidneys. For similar reasons the emunctories generally should be stimulated.

At the time of the convalescence, however, the use of local applications or sprays of hydrogen dioxide becomes almost imperative. Antitoxin neutralizes directly the toxins of diphtheria but it is not even in the slightest degree bactericidal. It has no effect upon Klebs-Löffler bacilli in the tissues or on the mucous membrane. These are usually thrown off during the reaction that follows the release from the burden of toxemia that has been clogging all normal action. Sometimes, however, the organism crippled by diphtheria is not able to do this promptly and there may be a renewal of the symptoms, or diphtheria bacilli may continue to live in the throat and be a source of danger to others for many weeks. It is in such cases especially where, because of laboratory diphtheria though there are no clinical symptoms and with regard to which boards of health very rightly refuse to raise the quarantine, the use of antiseptic sprays are especially valuable.

In general it may be said that under such proper care as has been here outlined, if applied promptly, diphtheria ceases to be the dread affliction that it used to be.

DR. OSLER ON IMMORTALITY.

There is a pleasure in store for all observers and thinkers in scientific ways, who have also emotions to be considered, in Dr. Osler's address on Science and Immortality, which was delivered at Harvard University, as one of the Ingersoll lectures, and which has since been published in the form of a small book.

It is interesting to know that physicians had been asked in vain to express themselves upon their belief in immortality, before this Harvard audience; interesting because the feeling is implied that the physician must speak the truth as he finds it, not as it behooves him to shape it to a creed, interesting that Dr. Osler himself and others of his colleagues did decline, feeling that Immortality was as far too great a subject for them to speak upon as was Life itself. That he finally consented was doubtless with the feeling that it might help others whose emotions and whose consciences were in conflict to realize that one might face the question frankly, in company with Plato, Job and Sir Thomas Browne, without any reference to the formal expressions of their own individual creeds.

The skill of Dr. Osler's treatment of this untreatable subject lies not in discussing whether science proves that there is or is not a life to come, but in showing how little science has to do with a question that lies wholly beyond its ken. The charm of the lecture lies in the frank, simple way with which he states fundamental truths that exist as such, despite the church's desire to build upon them hopes and beliefs in immortality; and despite the scoffers desire to break them into stones to hurl at believers.

The passionate longing of the human heart for "the touch of a vanished hand, and the sound of a voice that is still" is recognized, as well as the burning mystery of existence that at times forges a man into a mere link in an endless chain moving mechanically in its monotonous round, and again lights his torch on the mountain top, while he peers amid the shadows to see what lies beyond. That there may be something beyond this life the poets and the sages admit, nay, hope for, but Dr. Osler states very straightforwardly that "of the things that are unseen science knows nothing, and has at present no means of knowing anything." What weight may be given to arguments, hopes, longings based upon emotions of the heart he does not try to say. But he does say that "To keep his mind sweet the modern scientific man should be saturated with the Bible and Plato, with Homer, Shakespeare and Milton. To see life through their eyes may enable him to strike a balance between the rational and emotional, which is the most serious difficulty of the intellectual life."

"WITH THE HELP OF A TOOTH-BRUSH."

England is nothing if she is not conservative, and her colonies, as a rule, surpass her in out-Heroding Herod in her insular dogmas. This is as true in regard to her medical absorption and inhibition as it is in all else, with the exception perhaps, of her powers of expansion in regard to the acquisition of new territory, but for once she has succeeded in being more thoroughly British than even Canada itself.

It seems that the municipal authorities of Folkstone, Kent, England, have the support and management of an institution for indigent children of both sexes under their jurisdiction, and that the Mayor of the town is directly responsible not only for the distribution of the funds used, but is also the arbiter in the Council as to what is necessary for the welfare of its inmates. At a recent meeting of the Board, after action had been taken on the necessary expenditure of the pounds, shillings and pence of the appropriation for the construction of a new dormitory for the children and the proper equipment and furnishing thereof, a timid member, who must have had a drop of alien blood in his composition, haltingly suggested that a small unexpended balance should be devoted to the formation of a fund for the purchase of tooth-brushes, and moved that their daily use should be made obligatory on all the beneficiaries of the institution.

Then the Mayor of Folkstone arose in his wrath and delivered a speech that for patriotic warmth and fervor of expression and thorough and hearty appreciation of the blessing of having remained an Englishman, will live long in the memories of his auditors as a direct refutation to the belief that public speaking is one of the lost arts in the British Isles. What peculiar grudge this worthy man bore against the harmless and inoffensive tooth-brush it is hard to say; judging from his impassioned words it could hardly have been a personal one, as in all probability he had never rubbed against one or been brought in contact with it in any way. Rather it seems, he regarded it as only one of the factors that as he says "have led to the degeneracy of the nation, and which have increased the effeminacy of the race, robbing it of its virile force and rendering it weak and puerile." Britons, he gravely assured us, as many others already have, "never can be slaves," but the step he declares is a short one, that "will lead the United Kingdom to the fate that befell imperial Rome in the zenith of her effulgent power, if her offspring yield to the soft blandishments of the tooth-brush and persist in the enervating habit of forcibly removing the soil of Old England that "clings deeply and darkly" to the finger nails of her future bulwarks. Better the senility of poor old Uncle Ned, with the consequent necessity of letting the hoe-cake be, than the death of all moral perception and the premature decay of racial rectitude. Evidently to this moral magistrate the ounce of "stopping" is not worth the £ of cure, and early manhood sans teeth does not outweigh, in his thoroughly insular scales, the prospect of advanced old age, sans everything.

Luckily for us, who are not only the direct descendants of this stolid stock, but are proud of it, the lump seems to have been leavened by the yeast of the struggle for existence in the early colonial days. This in continuous years by the weeding out of the survival of the fittest, has increased until the pendulum has swung a little to the other side and the massive and ponderous British John Bull has, by the process of evolution, blossomed out into the alert and quick-witted American "Johnnie on the Spot." This is apparent not only in the professions, but also in all business operations, and there is not a trade or trades-union in the country that is not quick to take advantage of any possible opportunity to advertise their wares, particularly when they can add it as a rider to a bill that is connected with public hygiene or sanitary improvement.

Thus, the action of the convention of the United Master Bakers' Union, recently held in St. Louis, in doing away with the labels which have hitherto been pasted on the loaves of bread, was a master stroke from the standpoint of diplomacy. For while we have been taught that man shall not live on bread alone, yet it does, in one form or another, enter so largely into the diet of us all that it has fairly earned its sobriquet "of the staff of life," and is about as much of a necessity to the masses as the air that they breathe or the water which they drink. Bread, moreover, unlike whiskey, varies very little in quality, and while some loaves may be a trifle larger than other loaves, there is, as a rule, no such thing as bad bread on the market. For there is a certain standard that all bakers must live up to in these strenuous days of competition in order to exist as the time has passed when the union laborer will ask for bread and accept

a stone in return. To him the entity of the manufacturing baker is nothing, for unlike the Englishman with his hat, he does not care to "see his maker's name," and provided only that the bread is fresh and the loaf is of full size, he is content. He is not buying trade labels of red, white and blue, and as he does not intend to cast his bread upon the waters, with an ultimate prospect of again finding it, he is utterly indifferent to any scheme of chromatic embellishment or pictorial ornamentation.

Judging from a sanitary view point, the whole matter is largely one of sentiment. The labels are affixed while the dough is still fresh, and as the adhesive matter is a flour paste, there is little difference between the two when the process of baking is complete. There has been, to be sure, some handling in both cases, but fire is by no means an inert purifier and there is little or no danger of infection from their use, even if the labels were eaten with the bread, which is not the case. In fact, the risk is not to be compared with that of the deadly shine on the prize apple at the corner fruit stand, or to that refused by the refractory child who emphatically declared that "company or no company, she would not have her face washed with spit." So that taking one consideration with another Patter-cake, Patter-cake baker man seems to have scored a point. For it will be a simple matter to have the names stamped out in the bread pans, while they have achieved a reputation in the community for purity of purpose that is synonymous with that of their own baking powder, and second only to that of the "pure young man" in the opera of "Patience."

The only wonder is that they have succeeded in getting there *first*, before some provincial board of health had made the mosquito-cleared welkin ring with the echoes of this "label-ous" iniquity. But reform, unlike charity, does not begin at home, and the story of the mote and the beam is not only biblical, but proverbial.

ECHOES AND NEWS.

NEW YORK.

Big Class for Bellevue.—Seventeen candidates for entrance to the University and Bellevue Hospital Medical School have been turned away for want of accommodation. The total enrolment of this institution is now three hundred and sixty.

Gift to Nassau Hospital.—Mr. George Arents, father of George Arents, Jr., who was injured by the overturning of his machine during the Vanderbilt Cup race on October 8, has presented $1,000 to the Nassau Hospital, where the younger Arents was taken after the mishap.

Award to Dr. Knopf.—The Superior Jury of Awards of the St. Louis Purchase Exposition has just awarded Dr. S. A. Knopf, of this city, a gold medal for his works on the prevention and treatment of tuberculosis, which were exhibited in the Section of Hygiene and Social Science.

Dr. Lambert Dean at P. and S.—The Deanship of the College of Physicians and Surgeons of Columbia University, held by Dr. John G. Curtis as Acting Dean since the resignation of Dr. McLane in June, 1903, has been filled by the election, for the statutory term, of Dr. Samuel W. Lambert, Professor of Applied Therapeutics. Dr. Lambert is the son of the late Dr. Edward W. Lambert, and graduated from Yale with the degree of A.B. in 1880, and with that of Ph.B. in 1882. He graduated from the College of Physicians and Surgeons of Columbia University in 1885. Since 1896 he has been one of the visiting physicians at the New York Hospital. Dr. Lambert becomes ex officio a member of the Columbia University Council, of the Board of Trustees of the Roosevelt Hospital, and of the Boards of Managers of the Sloane Maternity Hospital and of the Vanderbilt Clinic.

New York Eye and Ear Infirmary.—The Directors of the New York Eye and Ear Infirmary, at their recent annual meeting, listened with the greatest satisfaction to the report of the Treasurer, John L. Riker, showing that the institution had been saved from practical suspension through the generous donations of charitable persons. At the beginning of the fiscal year the infirmary found itself with a deficit of $22,000. It was determined to keep the running expenses of the infirmary within its income, preserving intact the endowment acquired by gifts and legacies as perpetual funds. This necessitated the closing of the Platt Pavilion for Contagious Diseases on March 1, and later the number of cataract ward beds was reduced from fourteen to ten. This meant that within the year sixty-eight persons suffering from a disability that could have been removed were turned away. When the institution found itself with a big deficit circular letters were sent and personal appeals made to friends for contributions, with the result that the debt was wiped away and a balance acquired. A careful estimate of all available sources of revenue shows that, with the amount of charitable work which the infirmary is called upon to perform, even with the present limitations, more than the balance now at hand will be required for the coming year. The money which the institution annually needs above current receipts varies from $10,000 to $20,000. The demands of the work grew yearly, calling for increased accommodations, which have been provided for by gifts for building purposes, but the endowment for carrying on the expenses of the enlarged plant has not grown proportionally. The nose and throat department was given up for this reason two years ago. If the financial condition of the infirmary will warrant it this will be reopened.

The officers chosen for this year are: President, James J. Higginson; First Vice-President, J. Harsen Rhoades; Second Vice-President, W. Emlen Roosevelt; Treasurer, John L. Riker; Secretary, Dr. W. E. Lambert. Among the plans for raising funds for the infirmary is one for an exhibition of the best works of 100 American artists and 100 European artists at the American Fine Arts Galleries, beginning in the middle of November and lasting until the middle of December.

Pneumonia Inquiry Begins.—A systematic attempt to solve one of the most important sanitary problems

in the world was begun last week, when the Pneumonia Commission met in the offices of the Board of Health to consider means of preventing the spread of pulmonary diseases. The commission is composed of Drs. Edward G. Janeway, Emmett Holt, Hermann Biggs and Health Commissioner Darlington of this city; Drs. William Osler and W. H. Welch, of Baltimore; Dr. Theobald Smith, of Harvard, and Drs. John H. Musser, of Philadelphia; T. Mitchell Prudden, of the College of Physicians and Surgeons, and Frank Billings, of Chicago. At the request of Dr. Darlington the city appropriated $10,000 several months ago for the investigation, and it is expected that the deliberations of the commission will extend for at least a year. The object of this commission was thus set forth by Dr. Darlington in his address to the meeting: "For some years the problem presented by the large and constantly increasing death rate from the acute respiratory diseases has been the cause of serious anxiety to the Board of Health. This problem has long been recognized as one of the first sanitary importance, and efforts have frequently been made to find some method for its solution. Succinctly stated, the situation is this: During the last twenty years the general death rate in New York City has fallen 25 per cent. and the death rate from all the principal causes of deaths have fallen from 10 to 40 per cent., excepting in four groups of diseases, in which there has been an increase. These are: (1) the acute respiratory diseases, (2) cancer, (3) the diseases of the heart. (4) disease of the kidneys. The increases in these groups have been from 10 to 25 or 40 per cent.; in the acute respiratory diseases being about 15 per cent. In the present year there has been an extraordinary increase in the first half, the deaths from the acute respiratory diseases forming no less than 23 per cent. of the total death rate, or 18,000, of which 8,630 were from pneumonia. There can now be no question that the exciting cause in each one of the diseases of this group is a micro-organism, which requires such conditions for its growth and multiplication as are found in the living body. These organisms, practically, do not multiply at all outside of the tissues or cavities of the body under natural conditions. The infection, therefore, must practically always be the result of communication, directly or indirectly, from one human being to another. The conclusion, then, seems justifiable that these diseases are essentially communicable, and however great the inherent difficulties of the problem may be, theoretically at least, they should be to a greater or less extent preventable." The subjects discussed by the commission yesterday afternoon and evening were frequency and variation of occurrence, evidence of communicability, mouth infection, seasonal relations, collection of statistics and geographical relations. Dr. Janeway was chosen chairman of the commission, which was subdivided into a clinical committee and a bacteriological committee. The former is composed of Drs. Janeway, Osler, Musser, Billings and Holt, the latter of Drs. Welch, Prudden and Smith. Dr. Biggs will serve on both committees.

PHILADELPHIA.

Warning Against "Walk in" Signs.—A physician of this city was recently robbed of an oil painting valued at $100 by a woman who came in shortly before the close of his office hours. He now warns the profession against the use of the "Walk in without ringing" sign, which is used by so many physicians during office hours. It is apt to invite thieves as well as prospective patients.

Nurses Will Soon Return.—Dr. Anita Newcomb McGee and the corps of nine nurses who have been in Japan during the past six months, are soon to return after rendering valuable service in the various army posts of Manchuria. They were to leave Nagasaki on October 23. The Associate Society of the Red Cross of Philadelphia, under whose auspices they were sent, is planning receptions for them in San Francisco and Philadelphia.

Miners' Hospital Enlarged.—The new building of the State Hospital for Injured Persons of the Anthracite Coal Region was formally opened at Ashland, October 19. The new structure is a wing of the main building, and is one of the finest in finish and equipment of the hospitals in the State. Dr. L. Webster Fox, of Philadelphia, was the guest of honor at the dedication.

Married by 'Phone in Smallpox Ward.—The first marriage by telephone in the city of Philadelphia was performed on October 18 by Magistrate Macleary. The persons to be married were in the smallpox ward of the Municipal Hospital, where the man had been taken some days before. He was seriously ill with the disease, and his fiancee insisted upon the ceremony being performed. Enlisting the aid of influential persons she obtained permission, and the details were arranged. The magistrate asked his questions on the 'phone and the answers of the parties in the hospital were witnessed by the superintendent, physicians and nurses. The man died seven hours after the ceremony.

Births of Males Increase.—Exact figures are not at present available, but it is known there has been an increase in male births in the city during the past months. A force of clerks is now at work on the vital statistics, and the exact gain will be known in the near future. The increase is stated to be ten per cent. during the past ten months.

Officers of Pathological Society.—The Pathological Society of Philadelphia, at the annual election held on October 13, elected the following officers: President, Dr. Alfred Stengel; Vice-President, Drs. Joseph McFarland, W. M. L. Coplin, Allen J. Smith and M. P. Ravenel; Secretary, Dr. D. J. McCarthy; Treasurer, Dr. T. S. Westcott; Recorder, Dr. D. L. Edsall. The President, Secretary, Treasurer and the majority of the Vice-Presidents were re-elections.

Copper Versus Typhoid.—Dr. George T. Moore, chief of the laboratory of Plant Physiology in the United States Department of Agriculture, addressed the Philosophical Society of Philadelphia October 21, on the subject of copper as a bactericidal agent in the purification of water. He elaborated points previously mentioned in our notes as to the efficacy of copper sulphate and colloidal copper in destroying algae and typhoid and cholera bacilli. Efficiency, harmlessness and economy are the three considerations in the purification of water, and copper meets all these requirements. Letters stating the efficiency of the process were read and authorities quoted as to the non-poisonous qualities of the solution employed. As to the cost, it was stated that reservoirs holding 80,000,000 gallons had been treated for algae at a cost of $50. Some of the members of the Philadelphia health department are of the opinion that the city should, in view of the successful laboratory experiments recently carried out, allow the use of one of the reservoirs to test the process on a large scale.

Notable Victory for Pure Food.—Charles W. Spencer, one of the firm trading as the Kansas City Beef Company, has been convicted of selling meat on which a preservative was used. The trial was a notable one,

as being a test case regarding the use of sodium sulphite, and also because of the eminent witnesses engaged. A preservative company, said to be in New York, which supplied Spencer the material employed under guarantee of harmlessness, was backing the defendant in the suit. The preservative, known as Three X preservaline, was acknowledged to contain 88 per cent. sodium sulphite, 10 per cent. of boracic acid, and 2 per cent. of sodium bicarbonate. The chief witness for the defendant was Dr. Oscar Liebreich, of the University of Berlin, who was brought from St. Louis for the purpose. Dr. Liebreich admitted that he was at odds with the German Government regarding the harmlessness of certain food preservatives, but asserted his belief that some of their laws will soon be repealed. When asked if he considered good for Americans what his government had forbidden for Germans, he said German laws were political as well as health laws. It is reported he was paid $4,000 for his testimony. The jury returned a verdict for the Commonwealth.

CHICAGO.

Must be Examined Before Appointed.—Chicago surgeons and physicians who have practiced for thirty years, and whose names are known to medical men from New York to California, hereafter will have to pass the same examination as the most callow graduate of the smallest medical school in the country before they can be placed on the staff of attending physicians at the Cook County Hospital, according to the measure adopted October 21 by the County Board. Under the terms of a resolution presented by President Foreman, the Board voted to place all attending physicians and surgeons under civil service rules, as well as to reduce the staff to 65. The staff at present numbers 113.

Political Pull Doomed.—Political pull is doomed at the hospital as a result of the Board's action, which is declared to be one of the most important taken for years in relation to introduction of civil service at a county institution, and one of the reasons for the new arrangement is the enormous pressure being constantly brought to bear on the County Commissioners by those who want appointments. The lessening of the size of the staff and the making of the positions permanent will work great good to the hospital, it is thought by Mr. Foreman. Responsibilities will be better divided, and it will generally be found of the first importance to the welfare of the patient.

Ghoul Plot in Hospitals.—It is said that certain hospital authorities of this city were recently charged with catering to favorite undertakers in the matter of disposing of the bodies of persons who die in the institutions. The impression was given that the hospitals are receiving a commission from undertakers. While no direct charge was made, the insinuations were unmistakable. These accusations were made by Dr. Behm, vital statistician of the Health Department, and by a delegation of undertakers headed by former Alderman Sloan, to the Council Health Committee. So thoroughly convinced were the Aldermen of the truth of the accusations that an ordinance intended to stop the unjust practice was recommended to the Council for adoption.

Arrest of N. News Wood.—Reviving the sensational charges made by Dr. John B. Murphy against the Christian Hospital in his injunction suit last year, Dr. N. News Wood, President of the Hospital, was attached October 19 for contempt of court, and was given until October 25 to show cause why he should not be punished. Dr. Wood was arrested on complaint of Dr. Murphy, and was at once taken before Judge Holdom. He was finally released on $1,000 bonds, signed by his wife. The injunction which Dr. Wood is accused of violating restrained him from using the name, signature or picture of Dr. Murphy in any way in connection with the hospital, or from representing in any way that Dr. Murphy has or ever has had any connection whatever with the establishment. In his bill Dr. Murphy charged he had never heard of the Christian Hospital, and denounced the use of his name as fraudulent. It is now charged that Dr. Wood has been selling membership certificates with the picture of Dr. Murphy upon them, and is still using Dr. Murphy's name in his business, notwithstanding the order of the court.

State Asked to take Insane.—A movement has been started by the County Board to seek legislation transferring the Dunning Hospital for the Insane from County to State management. The plan, which originated with President Foreman, provides for a division of the institution. It is proposed to transform Dunning entirely into a State Insane Asylum, and establish the Home for the Poor and the Hospital for Consumptives on some large tract of land farther from the city. The Board unanimously approved the proposition and referred it to the Committee on State Legislation. They will petition the State Board of Public Charities to recommend to the General Assembly at the approaching session the enactment of the necessary legislation for the transfer.

Division of Fees.—The following decoy letter, signed by "J. C. Evans, M.D., Odell, Illinois," was sent to one hundred Chicago surgeons and physicians, asking whether or not they would pay the writer a commission for referring a patient to them:

"My Dear Doctor.—I have a case under my charge which requires attention along your line of work. I am not quite sure of my diagnosis, but will leave that whole matter to you. The people have heard of you favorably, and are inclined to go to you for treatment. As they are wealthy they ought to pay a good fee for the service. Now, doctor, you understand that I am a young man just starting a practice, and in small towns we cannot make any distinction between the rich and poor in the matter of charges. I have only received my regular visiting fee in this case. I understand, however, that it is customary for physicians to pay a commission of 25 per cent. upon all referred work, and I will deem it a favor if you can take care of me in this matter. Kindly let me hear from you by return mail, as I am anxious to bring the case to you at once if satisfactory arrangements can be made. Yours truly."

The result of these letters was 18 acceptances, 26 declinations, and 56 failed to answer. The decoy letter was published in the *Chicago Daily Tribune*, October 17, with the substance of the letters of the gentlemen who made acceptances, publishing their names. It is believed that one or two local physicians instigated this matter, and then turned it over to the *Chicago Daily Tribune*. The profession in general is very much incensed at this underhand method of exposure, and no doubt the matter will be thoroughly aired at a subsequent meeting of the Chicago Medical Society or its Council.

Death for Insane and Incurable.—At the National Prison Congress, held at Quincy, Illinois, October 19, according to the press dispatches, Dr. Henry G. Hatch, of Quincy, advocated homicide or the right to let a person take his own life when he is found to be incurable; and also he would have the State dispose of the permanently insane and incurable by putting such persons to an easy death. He also favored sterilization to prevent the increase of the criminal class. He would

have the State prevent the marriage of undesirable persons, and would forbid the saloonkeeper selling liquor to the habitual drunkard. Several physicians have been interviewed regarding the view promulgated by Dr. Hatch, and have denounced it in vigorous terms.

Is Consumption Hereditary?—Dr. Charles L. Mix, in a popular lecture on this subject, denied Dr. Koch's theory of hereditary predisposition to tuberculosis. He cited statistics to show that the disease is merely a result of infection or exposure. Members of families in which consumption has appeared need not be haunted by a fear of the disease, provided they do not expose themselves to the tubercle bacillus; nor should members of families in which it has not appeared believe they are immune. The hereditary thory is based on the unscientific argument that since consumption appears in certain families and not in others it must be inherited. No satisfactory theory why consumption is more frequent between the ages of 20 and 30 has ever been advanced. Why do one-third of all stenographers die of consumption and only one-tenth of those engaged in outside work show hereditary predisposition? Why do bookkeepers show a death rate of nearly 28 per cent.? The reason that girls suffer more from consumption than boys is because they are at home taking care of the consumptive parents.

Deformities of the Nasal Septum.—Dr. Chas. M. Robertson read a paper on this subject before a recent meeting of the Chicago Laryngological and Climatological Society, in which he enunciated the following points: (1) The sawing off of a ledge or spur will often give more room than would appear possible at the pre-operative examination. (2) Great care in saving mucous membrane in these cases is not so important as is usually believed, as it is usually hypertrophied and, therefore, a diseased tissue. (3) The precaution of avoiding a perforation which he had seen less than a dozen times in his operative life. (4) The impracticability of "V"-shaped operations as made by files and knives on small deviations, the consequent packing into place till the septum has regained its rigidity. (5) The utter failure of all crushing operations as they are brutal and unsurgical, aside from being impractical, from the fact that it is impossible to make the circumference of an arc fit into a space the length of a segment of same. (6) The ease and success of the Gleason method in most cases where there is no external deformity. The advantages in the short time that packing is necessary. (7) The absence of firm cartilaginous support in the window resection operation, and the liability of one or more perforations occurring during operation or healing. (8) The importance of saving all tissue possible that has function and is not diseased. (9) The total disregard of so many surgeons to this class of nasal stenosis, and the great benefits accruing from such operations on special functions and the general health of the individual.

Invisible Droplets of Sputum Expelled in Talking.—Dr. Alice Hamilton read an interesting paper on this subject before the Chicago Medical Society, in which she embodied the results of experiments that were carried on in the Memorial Hospital of Infctious Diseases. Recent bacteriological investigations show the streptococcus invariably present in cases of scarlet fever, yet in many cases it is of low virulence. Scarlet fever may run its course without any streptococcus complications when streptococci are present in the tonsils. A member of the hospital staff contracted a severe rhinitis and pharyngitis when in attendance upon a case of scarlet fever. Another contracted streptococcal tonsillitis after his first visit to the ward, and organisms were found not only in the throat, but in the blood A third contracted streptococcal tonsillitis after having performed an autopsy on a case of scarlatinal sepsis. It is well known that nurses suffer from sore throat soon after going on duty. Last spring, to prove whether the streptococcus was actually disseminated in the air by scarlet fever patients, plates were held before the mouths of children, who coughed or cried, from half a minute to one minute, the expirations being forcible, and of fifty patients examined, the results were not uniform so far as the number of colonies was concerned. A good deal depends upon the dryness of the mouth, etc. The colonies on plates varied from one to 75, and the proportion of streptococci varied also. Of fifty patients, 47 were found by cultures made from swabs to have streptococci upon the tonsils; 33 expelled streptococi in coughing, crying, or breathing forcibly with the mouth open. In some the number of streptococcus colonies was less than one per cent.; in others it rose to over 50 per cent., there being an average of 20 per cent. Of 34 children who coughed or cried, 20 of them had streptococcus colonies. Of 16, who simply breathed heavily, 13 expelled streptococci. These cases represented all varieties of scarlet fever, and the observations and cultures were made during the first three weeks of the disease. After detailing further experiments and observations, Dr. Hamilton said, among other things, that surgeons and nurses may be the source of septic infection of patients even after the ordinary precautions have been taken. Surgical dressings prepared beforehand and indeed at the time of operation by nurses whose mouths were unprotected, and who must necessarily speak to each other occasionally, may be fraught with danger. There was undoubtedly more or less danger from the germ-laden sputum of the average surgeon who keeps his face close to the wound when describing the technic of an operation to the class.

The Management of Bright's Disease.—Dr. Alfred C. Croftan, in a paper with this title, read before the same Society, stated that the terms Bright's disease, nephritis and albuminuria are not infrequently used synonymously. It seems almost trite to correct this popular misconception by the statement that Bright's disease may be and often is the cause of nephritis; that nephritis may be due to Bright's disease, but may also be due to a great number of other causes. Finally, albuminuria is a common, though not a determining symptom of almost any form of nephritis. The expression "Bright's disease of the kidney" is, therefore, not so wrong as many are inclined to think, although the expression "the kidney of Bright's disease" would be more correct. The most modern views in regard to Bright's disease seem to be that his clinical entity is primarily a cardiovascular disorder of manifold origin The old postulate, and the one most commonly accepted even nowadays, was that the kidneys for some reason of other became primarily involved, and that as the result of this renal inadequacy certain excrementitious urinary bodies were retained in the blood and tissue juices, and there produced all the symptoms of Bright's disease, including the cardiovascular changes. Since we have learned to understand that in many instances the cardiovascular changes precede the nephritic changes; that many cases of Bright's disease progress to a fatal termination, with practically no involvement of the kidneys, or only very slight degrees of renal inadequacy, we have been forced to abandon this conception, at least for the overwhelming majority of cases. After considering the theoretical possibility that some poison or group of poisons may affect simultaneously the

heart, arteries and kidneys, the author stated that the other most important signs of Bright's disease are to be attributed to serious impairment of the kidneys, and are the inevitable result of any nephritis. He referred in particular to the edemas, to the retention of chlorides, and other well known signs of renal inadequacy. What the causes of this general intoxication, affecting chiefly the cardiovascular apparatus, may be, remains undetermined. He thinks there is very little doubt that in many instances chronic gastro-intestinal disorders can be incriminated, and that abnormal putrefactive processes in the bowel, or abnormal disassimilation of the food products, as a result of perversion of the gastro-intestinal function, can be made responsible. All prophylactic and causal treatment must be directed towards the correction of any gastro-intestinal perversion, or any hepatic insufficiency that may be present. Next, the chief point of attack must be the cardiovascular apparatus; and then, in advanced cases, with renal involvement, treatment may profitably be directed towards the kidneys themselves, and, lastly, as in any other disease, but particularly in so chronic a disorder as Bright's disease, much attention should be paid to the treatment of the patient, chiefly in he sense of keeping up his general nutrition, and enabling him to exercise his resisting powers to their full effect. The treatment of the gastro-intestinal disorders, in view of the protein character of the derangement, must needs vary in each individual case.

CANADA.

Personal.—Dr. Peter H. Bryce, chief medical officer for the Interior Department, Ottawa, has been in St. John, New Brunswick, where he has been selecting a site for a detention hospital, which the Federal Government will erect there at a cost of $30,000. It is expected that the hospital will be in operation by next season.

Typhoid Fever in Winnipeg.—A short time ago the city of Winnipeg appointed a medical commission to inquire into the cause of the prevalence of typhoid fever there. This committee has completed its work, and reports that in their opinion the prevalence of the disease can be laid almost wholly to unsanitary conditions prevailing in the city, which, coupled with house flies, of which Winnipeg can boast more than its proper quota, is held accountable for the epidemic under investigation.

Hospital Saturday in Vancouver.—Saturday, October 15, was "Hospital Saturday" in Vancouver, B. C. Collections were made which totaled $839.68, less than a year ago, when the sum amounted to $1,119.75.

New Wing for Hamilton, Ontario, Hospital.—The Governors of the General Hospital, Ontario, have decided to erect a new wing to the institution at a cost of $40,000. When erected the new building will accommodate 65 private patients, besides providing a modern operating room. It is likely that at the coming municipal elections a by-law will be submitted to the ratepayers for raising $50,000 for the purpose.

Graduation Exercises at the Toronto General Hospital.—The Toronto General Hospital Training School for Nurses held its annual graduating exercises on the evening of the 21st of October, when thirty-two nurses received their diplomas, eighteen of whom have already received appointments in other hospitals. The lady superintendent in presenting the twenty-third annual report stated that during the past year 625 applications for admission had been received. Forty-two of these were accepted on probation and twenty-seven were enrolled as nurses. At the present time there are four probationers in the hospital, 76 undergraduates and seven graduate nurses, making a total of 87, which constituted the nursing staff of the hospital. The total number of nurses who had received their diplomas in this school was now 407. Dr. Fred. LeM. Grasett delivered the address for the medical staff, Sir William Meredith presented the diplomas and Dr. Charles O'Reilly, the Superintendent, distributed the prizes.

Consumption of Spirits in Canada.—In Canada the consumption of spirits during the last fiscal year amounted to 5,343,954 gallons, or .958 gallons per head of population. This is the largest consumption on record since 1885. Then it reached 1.126 gallons per head. Last year the consumption of beer was 27,608,510 gallons, an average of 4.918 gallons per head of population. The use of beer has been steadily on the increase since 1869. The consumption last year was the largest on record, except the year 1902, when it reached 5,102 gallons per head. The average since 1869 was 3,182 gallons. The consumption of wines remain about the same, 0.96 gallons per head. The average quantity of tobacco used per head per year has been 2.178 pounds for thirty-five years. Last year it reached 2.765, the largest on record.

GENERAL.

American Journal of Urology.—The first number, October, 1904, of *The American Journal of Urology*, published by the Grafton Press, New York, and edited by Dr. Henry G. Spooner, of New York, has been received. Articles by Dr. Howard Kelly, of Baltimore; Dr. Winfield Ayres, of New York, and Dr. Ferdinand Cathelin, of Paris, all eminent in the field of genito-urinary diseases, constitute the leading features in this number, together with a liberal number of abstracts of interest to genito-urinary specialists. The fact that the American Urological Association and several other genito-urinary organizations have appointed this journal as their official organ, assures us that it will be a valuable addition to medical literature. The editorial board consists of the following well-known physicians: Arthur Bevan, M.D., of Chicago; Follen Cabot, M.D., of New York; A. E. Gallant, M.D., of New York; Orville Horwitz, M.D., of Philadelphia; Howard A. Kelly, M.D., of Baltimore; Gustav Kolischer, M.D., of Chicago; Robert T. Morris, M.D., of New York; William H. Porter, M.D., of New York; Robert Bruce Preble, M.D., of Chicago, and Hugh H. Young, M.D., of Baltimore. The magazine, in addition to its worth from a medical point of view, is handsomely gotten up, and taken altogether is a credit to both editors and publishers. There has long been a demand for an exclusive genito-urinary journal, and if the standard which characterizes the first number is continued *The American Journal of Urology* will be considered the leading organ in this field in America. The subscription price is $3 a year; $3.50 for foreign countries.

Mississippi Valley Medical Association.—The officers elected at the Thirtieth Annual Meeting of the Mississippi Valley Medical Association, held at Cincinnati, Ohio, October 11-13, are as follows: President, Bransford Lewis, M.D., St. Louis; First Vice-President, Frank Parsons Norbury, M.D., Jacksonville, Ill.; Second Vice-President, J. H. Carstens, M.D., Detroit, Mich.; Secretary, Henry Enos Tuley, M.D., Louisville, Ky.; Assistant Secretary, John F. Barnhill, M.D., Indianapolis, Ind.; Treasurer, S. C. Stanton, M.D., Chicago, Ill. Next place of meeting, Indianapolis, Ind., October, 1905.

OBITUARY.

Dr. Montefiore Levi Maduro, of New York, died in St. Luke's Hospital on Saturday as the result of internal injuries received six years ago in a bicycle accident in Central Park. Dr. Maduro was born at St. Thomas, Danish West Indies, and was educated at the College of Physicians and Surgeons, and in London, Paris, Vienna and Berlin. He was at one time on the house staff of Lebanon Hospital and visiting physician at Mt. Sinai Hospital. He was a member of the American and State Medical associations.

Dr. Oliver Soper, of Upper Montclair, N. J., was stricken with paralysis while at breakfast on Saturday after returning from an early professional visit. He died late in the afternoon. He was born in Lodi, Bergen County, N. J., sixty-one years ago. He studied medicine while he was a blacksmith. For thirty years he practiced in Lodi. He moved to Montclair in 1892.

Dr. Truman E. Parkman, a physician and surgeon who had practiced his profession in that vicinity for fifty years, died at his home in Rock City Falls, October 24, aged eighty-three years.

Dr. William C. Flowers, of Cambridge, Mass., died October 20, aged seventy-nine. He was formerly one of the best known physicians and surgeons in Cambridge. He was born in Halifax, N. S.

Dr. Samuel W. Woodhouse died suddenly in Philadelphia on October 23, aged eighty-three. He was one of the oldest graduates of the University of Pennsylvania. He was surgeon at Fort Delaware in 1854, at one time physician to the almshouse and penitentiary, and accompanied the Sitgreaves-Zuni expeditions to New Mexico and Central America.

Dr. George Purviance, Assistant Surgeon General of the United States Marine Hospital service, fell or jumped from a fourth story balcony of the Orthopedic Hospital in Philadelphia on October 19, and died a few minutes later. Dr. Purviance was suffering from a nervous trouble, and had been in the hospital since August. He was sixty-three years old. After practising for a time in Pittsburg he entered the Marine Hospital service in which he served more than thirty years.

Dr. Auguste Frederic Muller died in Germantown, Pa., October 20, aged sixty-four, after being ill for a long time with cancer of the stomach. Dr. Muller was chief of staff of the Germantown Hospital, and one of the most prominent physicians in that part of the city. He was born in Alsace-Lorraine, tought in the Civil War, and acquired a taste for the physician's calling while in the hospital recovering from a wound. Later he was made librarian at the Pennsylvania Hospital, and finally studied medicine.

CORRESPONDENCE.

OUR LONDON LETTER.

(From our Special Correspondent.)

London, October 15.

A FRENCH MEDICAL PILGRIMAGE TO LONDON—THE OPENING OF THE MEDICAL SCHOOLS—AN ANGLICAN CANON ON THE CLERICAL AND MEDICAL PROFESSIONS.

In the medical world of London the past week has been given up to the entertainment of a band of French medical pilgrims, numbering about 150, who, greatly daring, braved the terrors of the Channel and the horrors of our British fog in order to see something of what is being done on this little island for the cure of disease and the discovery of new truths likely to be beneficial to mankind. The visit, in spite of difficulties inevitably attending the organization of such things, went off very successfully. A liberal discount must, I suppose, be made from the glowing eloquence with which the Frenchmen expressed their admiration of all they saw in hospitals and laboratories, but as far as could be judged, they were genuinely pleased with their reception. Professor Poirier, who was one of the most prominent speakers at the various banquetings and other entertainments held in their honor, has confided to a French journalist that "this visit will be to us a profitable and imperishable memory. All we have seen in London is worthy of admiration—the cheerful aspect of the sick wards, which are adorned with flowers, and made gay by the flitting bright pictures of those graceful blonde nurses; the magnificent results of an individual initiative such as we have not made the most of in France. I leave England enchanted with my too brief visit." On the other hand our people were well satisfied with their guests. The idea of the pilgrimage originated with Dr. Sillonville, who, as usually happens in such circumstances, was less *en evidence* during the visit than any other of the band. In his student days he worked in England, and for the last ten years he has visited London every winter. He was struck by the comfort of the wards in the hospitals, by the great care taken of the patients, by the excellence of the nursing arrangements, and also by the skill displayed by the physicians and surgeons. But he was also struck by the absence of French medical students from the wards. This made him ponder over the question. Science is now the same in every civilized country. Discoveries made in Paris, London, or Berlin are immediately known the world over; but there were practical hints to be obtained by a personal visit that could never have been obtained otherwise. Several years ago he first suggested that French medical students should visit London, and he continually urged upon them the value of the experience they would obtain. There was at that time not much enthusiasm for the scheme. They thought there could not be much to learn, and "we do not know English" was a standing objection. He endeavored to meet this objection. Six years ago he organized classes for the teaching of English at the various hospitals, and evening classes were established for house physicians and surgeons. They met together and translated articles published in the *British Medical Journal*, and many medical textbooks, in order to obtain a good grasp of the technical terms. Then came the Entente Cordiale, and finally a very large number of the young men who had obtained a valuable knowledge of English accepted this proposal, and the present visit was the result. One hundred and fifty came, but there might have been three hundred. Asked what part of hospital work had struck the visitors most forcibly, Dr. Sillonville said that many things had impressed them, but perhaps none more so than the excellence of the nursing staffs. The nurses of the Paris hospitals are not so good, and the importance of this cannot be overestimated. A physician or surgeon can give directions for treatment, but he can be with a patient only for a few minutes of the twenty-four hours, and the rest of the time the patient is in the care of a nurse. Necessarily, then, for efficiency a capable staff of nurses is imperative. Dr. Sillonville sincerely hoped that the visit would be the commencement of much intercourse in the future between medical men of both countries to their mutual advantage. They had much to learn from each other, and they were all delighted at the prospect of a visit of British medical men to Paris. From many other sources it may be gathered that one of the things that most impressed our visitors was the English nurse.

They were struck by the high standard of the nursing staff at every hospital which they visited. All the nurses seemed to them to have the air of ladies; most of them were clever and many of them were beautiful. Then the wards struck them as brighter and cosier than those of the Paris hospitals. In fact, in some places they were inclined to think the comfort was rather overdone. From the scientific point of view one of the things that most interested them was the Pathological Laboratory of the London County Council Asylums, which is under the direction of Dr. Mott. Here the brains of deceased lunatics at the eight great asylums of the County of London are examined and classified. Dr. Mott exhibited the classified collection, and pointed out that the brain was as characteristic of the individual as the face. Among the brains was the smallest specimen of an adult human brain known to exist, and Dr. Mott pointed out that the brain of a chimpanzee was of a higher type than those of many lunatics. The brain was not unlike a large walnut—the skull corresponding to the shell, the dura mater, pia mater, and arachnoid membrane to the skin, and the brain substance itself to the nut. One important result of the work of the laboratory had been that dysentery, which for long had made fearful ravages in the asylums, was proved to be an infectious disorder; the segregation of the patients which resulted from this discovery produced a great saving of life. One great disadvantage from which this splendid laboratory suffers is its situation many miles out of London amidst the Essex marshes. Many of the visitors expressed surprise that so important an institution should be buried away in the country instead of being made accessible by being placed in the metropolis. This view has frequently been expressed before, but the County Councillors turn a deaf ear to all representations on the subject.

If it be true that blessed is he that hath his quiver full, it may be said that London rejoices in a perfect benediction as far as medical schools are concerned, for she has eleven. These were opened last week for the winter session with the usual blare of oratory. The homilies were for the most part of the usual character—variations on the eternal text "Be virtuous and you will be happy." In one or two of them, however, the speaker departed somewhat from the well-beaten track. Sir William Macewen, of Glasgow, who delivered the Huxley Lecture at the Charing Cross Hospital, spoke in defense of the appendix against which a war of extermination was now being waged in some quarters. "Some surgeons," he said, "have freely admitted that when making an incision in a patient for some other disease they frequently remove the little organ as a precaution against appendicitis." But is the appendix, he asked, entirely useless to man? Some contended that the small intestine could be done without, that the spleen was superfluous, and that the stomach itself could very well be dispensed with simply because some people had lived after these organs were removed. Sir William drew a fanciful picture of a future race in whom the whole digestive apparatus would be removed, and also would retain but a small incision, down which could be dropped concentrated tablets of nourishment. "All that would be necessary," he continued, "would be for a firm of chemists to enlarge its premises, and the tablets could be delivered every morning by the postman. No navy would be needed to protect our sources of food supply, and the domestic servant problem would be solved forever." Macewen holds that the appendix itself has an important function in assisting digestion. Moreover, it is the chief habitat of a certain micro-organism that is most useful in attacking imperfectly assimilated nourishment, and if only as a medium for the cultivation of these bacteria the appendix has its useful mission to perform and should be retained. The address may be regarded as a counterblast to Metchnikoff's suggestion that old age may be prevented by the removal of the large intestine.

At St. Mary's Hospital, Dr. A. E. Wright, who is chiefly known to fame as the inventor of a method of inoculation against typhoid fever, the value of which is now under consideration by a Special Committee appointed by the War Office, deplored the want of interest in research shown by his fellow countrymen. He said it was doubtful whether among the forty or more millions of the British race a hundred scientific workers were actively and continuously engaged upon the problems of disease. Here and there an isolated worker was to be found devoting to the work of medical research such free time as he might have at his disposal, but practically no organized effort was in existence. The cause was, according to Dr. Wright, easy to discover. It was a question of financial necessity. Not only was there nothing in the form of reward for successful solution of the problems of disease, but the worker who devoted himself to the task of solving this, the outstanding problem of civilization, immediately found himself face to face in his own person with problems of the primitive savages, those of finding subsistence, and clothing and shelter from the weather. His solution was the provision of salaries on the scale of those which obtained in civil or other Government services. A sufficient beginning would be made by the annual allotment of even so small a sum as was paid to the State in the form of death duties from the estate of a single millionaire. This would provide an average income of £500 for 100 workers, and would probably leave over a sufficient balance for the upkeep of the necessary laboratories.

The London School of Tropical Medicine is, of all our institutions, the one in which the intelligent visitor finds the most striking embodiment of the imperial idea. At the opening of the winter session the place swarmed with ex-Governors of Colonies, the proconsuls of the British Empire, and in the wards and laboratories are seen the men who are about to go forth to these distant lands as missionaries of health and civilization. Sir Patrick Manson, who spoke after the delivery of an inaugural address by Sir Charles Bruce, formerly Governor of Mauritius and several other colonies, also deplored the want of funds available for the furtherance of medical research. He said that it had come to be recognized that the great causes of disease in the tropics were not bacteria but protozoa and larger parasites. These, he pointed out, had never been adequately studied in England; the most important information on the subject had been gathered from France and Germany. There is not, said Manson, with sorrowful emphasis, a single man of English nationality who is a competent protozoologist or helminthologist. The Government has promised a grant of $2,500 a year for five years for the endowment of a worker on protozoology, and Manson appealed to the public for an equal sum to be devoted to the study of helminthology. Unfortunately the British public cares nothing either for worms, except as bait for fish, or for protozoa.

At the School of Medicine for Women, Miss Murdoch complained that the unthinking world has adjudged the whole body of medical women as frumps because a few have been careless of their personal attire.

As a fact, she said, many of the graduates dress well and look well. To this it may be replied that it is also a fact, painful though it be to admit it, that there are many women graduates and students who do neither. Short hair and general dowdiness are still the badge of a considerable proportion of their tribe. But it is pleasant to hear one of their leaders denounce frumpishness. Miss Murdoch made the general statement that most women wear too much. "Three layers," she said, "including the dress, seem to me all that is necessary, though I have counted as many as twelve."

At the annual dinner of the Norwich Medico-Chirurgical Society, Canon Jessopp, a cleric who has won considerable distinction in literature, confessed that when at the age of twenty-three years he had charge of a parish he had practised the art of healing by the light of Nature after a somewhat heroic fashion. He had given calomel in 12-grain doses, had cut blisters (*sic*) off an old woman's breasts, and had done all sorts of operations. He looked back with horror at these proceedings and was thankful that he had escaped trial for manslaughter. Perhaps it was owing to this experience that he had been saying for many years that the medical profession was the grandest in the world. To begin with, he said, the preparations for it were incomparably superior to those required for entering any other profession. When he considered the course through which every medical man had to pass before he was qualified to practise it filled him with admiration and also with a certain amount of shame and certainly of regret. He was afraid examinations through which the men of the clerical profession had to pass before they were qualified to teach and preach and exercise their functions were less severe than they used to be. While the medical profession had been going up the clerical had been going down. The estimation in which medical men were now held was immeasurably higher than it used to be when he was young. The Canon went on to say that the hope of civilization, of the happiness of the human race and of progress in all directions lay with the doctors who were pushing forward their discoveries every day. Sir Arthur Conan Doyle, M.D., the creator of Sherlock Holmes (the idea of which character he got from Joseph Bell, one of his old Edinburgh teachers), who was present, indulged in some amusing reminiscences of his short career as a medical practitioner. When he was in America he remembered an American being kind enough to take the chair at a little dinner at which he was present; and in proposing his health he said it was a sinister fact that although Conan Doyle was said to be a doctor, no living patient of his had yet been seen. Doyle went on to say that few medical men had seen so many sides of the profession as himself. In his short and checkered career he had served as a surgeon in a whaling ship; he had been in South Africa as an army doctor; he had practised in the country, and in the slums of a great city. He had even attained the dignity of a consulting room in Wimpole Street—one of the thoroughfares in this metropolis in which doctors most do congregate. This referred to the fact that he had tried consulting practice as an ophthalmic surgeon. Patients did not come, however, and he soon found his true sphere in literature. "One conviction," he proceeded, "has always remained with me, and that is that whatever line of life a man goes into, as long as he is to use his brain the medical training is absolutely the best training a man can undergo. There was a time when a young man who was going to do anything in the world was passed mechanically through the bar. I believe the time will come when the similar young man will be passed through medicine, because I know no other means by which he could get to the fundamental and absolute facts of life. The mere fact that in his training a man has to undergo so searching an ordeal in the most critical years of his life, and pays such enormous attention to detail, is in itself evidence that he receives a splendid training. I have always said that a man who has mastered Gray's Anatomy, to him life has no future terrors. If our young army officers had five years' study in the same sense that the young medical man has five years' study we should become the terror of Europe."

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-fourth Annual Meeting, held at Pittsburg, September 27, 28 and 29, 1904.

THIRD DAY—SEPTEMBER 29.—*Continued.*

(Continued from Page 763.)

Brief Remarks Regarding the Home Modification of Milk.—Dr. Theodore J. Elterich, of Allegheny, presented this paper, the object of which was to emphasize a few general truths regarding the home modification of cow's milk, without attempting to cover the work which has been done in this direction, not to criticize the various methods in use at the present time. According to the method used by the author, the percentages of the proteids and fat, very low at first, are gradually increased until they approximate the averages required at the end of the first year. The quantity for each feeding depends upon the age of the child, and the table recommended by Holt is usually followed. An accompanying weight-chart of a patient suffering from malnutrition is a fair indication of the results obtained in the majority of cases.

Observations on Food in Typhoid Fever.—Dr. James I. Johnston, of Pittsburg, said, that in the management of typhoid fever the attention should be directed primarily to the nursing, care of the patient, efficient hydrotheraphic measures and to proper feeding; secondarily, to the employment of drugs, usually for the relief of symptoms. He discussed the question of food about which there is diversity of opinion, and quoted the case of Dr. Stuart Patterson, of Pittsburg, in which the patient had no food for twenty-one days—water only being given. The course of the disease was very favorable and the loss of flesh and strength were no more marked than is usual. While not agreeing entirely with those who would give no food during the period when desire for it is absent, Dr. Johnston has restricted his patients at this time of the disease very greatly, and in a study of some fifty cases he thinks he has seen some advantage, at least in comfort to the patients, when compared with fifty other cases treated immediately preceding this group. In the class of cases in which limited feeding was employed during the period of anorexia the cases were less toxic, were no more emaciated than other cases, and made a quicker convalescence. There were but three cases of relapse, no perforations and few hemorrhages. All had flat abdomens, one only required treatment for tympanitis, and few any treatment for diarrhea other than stopping nourishment for a brief period.

The Influence of Milk Infection Upon the Course of Acute Infectious Disease in Adults.—Dr. David L. Edsall, of Philadelphia, reported a large series of cases of typhoid fever occurring in one hospital ward and under entirely similar conditions, excepting for a difference in the care of the milk in the two periods contrasted. When the service began a very large proportion of the cases had severe diarrhea and many had mild diarrhea, while abdominal symptoms that were frequently very distressing were strikingly common. The milk was suspected to be at fault, and bacteriological examinations showed extremely large numbers of bacteria. The milk was Pasteurized after this, and in the following three and a half months of the service, diarrhea was almost absent and abdominal symptoms were extremely slight and were uncommon in the group of cases as a whole, the milk evidently having produced the diarrhea and the severe abdominal symptoms in the earlier cases, and probably having been largely responsible for several deaths. The milk supply was subsequently changed and is now under careful regulation and it seems in all ways satisfactory. The great importance of determining definitely in both private and hospital practice that the milk comes from an approved source and is properly cared for was emphasized, as well as the fact that such conditions, while not common in such widespread epidemic form, are still undoubtedly common in individual cases; and a bad milk probably exercises not uncommonly a very evil influence upon the prognosis of acute infectious diseases. Milk infection of this kind is peculiar from a clinical standpoint, in that it is observed in patients already ill. The milk infection is very likely to be overlooked, because the symptoms may readily be attributed to the primary disease.

Dr. Adolph Koenig, of Pittburg, in the discussion said, he believed that physicians should be guided largely in their efforts to cure disease by paying attention to the natural instincts of their patients. He believed that it was an established physiological fact that there is no digestion of food possible when there is a temperature of 102° F., although he is not in a position to verify it. He has withheld food, absolutely everything, but a little whiskey for sixteen days, with the most happy results. As soon as the patient manifests desire for food, he believes that milk is the best diet and the best results are to be obtained by adding barley water.

Dr. Stengel, of Philadelphia, considered the doctrine of overfeeding a most pernicious one, and one in which he had seen the most disastrous consequences. While he could not bring himself to withhold food as Dr. Koenig suggested, during the period of anorexia, still he is convinced that in the first period of the disease, nine out of ten are overfed.

Section B.

Paraffin as a Surgical Medium.—Dr. M. Delmar Ritchie, of Pittsburg, recommended the use of cold solid paraffin of a melting point of 110° F. injected by means of a lever injector. He stated that the production of an embolus was impossible when cold, sterile paraffin was injected into the surgically cleansed tissue through the rounded needle point, and that there was no known danger to life in the correction of any deformity, however marked.

Dr. Stewart L. McCurdy, of Pittsburg, felt that the employment of cold paraffin would be a great advance over the old method of employing the heated article which had been followed in almost every instance by some complication, such as ulceration or hyperemia.

Dr. Dillinger referred to a case of total blindness caused by the paraffin getting into the central artery of the retina, which he felt was probably due to semisolid or hot paraffin being used, and that much of this objection would doubtless be removed by the method suggested by the author.

Dr. Shirls B. Jackson, of Pittsburg, stated that he also had seen a case of embolism of the retinal following the employment of this remedy, and believed it was better to leave the work to those who had considerable experience in it.

Clinical and Statistical Study of Convergent Strabismus.—Dr. Wendell Reber, of Philadelphia, gave a critical review of 36 private patients and 130 hospital cases, being classified according to sex, age of onset, determining influence, degree of deviation, amblyopia, increase in vision, variety of squint, and refraction. The treatment and the results obtained in each case were carefully outlined, those patients above the age of seven being contrasted with those below that age. In conclusion, he stated that he believed heredity played an important role, and urged the early treatment of all cases occurring before puberty with properly adjusted glasses.

Carbolic Acid and Ammonia Burns of the Eye.—Dr. Edward Stieren, of Pittsburg, called attention to the great dearth of information in ophthalmic literature on the action of ammonia on the tissues of the eye, and stated that eyes so affected almost invariably are rendered blind by dense opacity of the cornea. The essayist reports four cases of ammonia and three cases of carbolic acid burns of the eye, and remarking on the similarity for the first few days of the ocular reaction to these agents, and the great dissimilarity in the ultimate outcome, those burned by ammonia recovering with very poor vision or no vision at all, while the carbolic acid burned cornea clear up and in time recover their former transparency.

Mastoiditis.—Dr. Fremont W. Franhauser, of Reading, considered the condition with reference to the etiology, pathological changes, symptoms, diagnosis, prognosis and treatment. He urged careful examination in all suspected cases, with operation, being sure to make the opening large enough, if no improvement occurs within a short time, believing if the operation was not complicate, there was very little danger and that it was better to sacrifice some parts to early operation than to allow the grave conditions to continue, and thus run the chance of losing a valuable life.

Retarded Development of Speech in Young Children.—Dr. G. Hudson-Makuen, of Philadelphia, after explaining some of the frequent causes of faulty speech development, such as structural irregularities in the peripheral organs, obstructed nasal respiration and paretic conditions of the nerves supplying the tongue, palate and lips, dwelt particularly upon disturbances of hearing as a factor in the causation of the various forms of defective speech, and of the effects of faulty hearing and faulty speech upon mental development. He said, that if a child does not hear words spoken he will not understand them, and if he does not understand them he will not use them, and that the intellectual centers being deprived of the stimulus which comes from the use of spoken language will share in the retarded development, and the result will be a feeble minded as well as a deaf

child. The cause of the condition may be by no means difficult to determine and the diagnosis and prognosis are equally difficult, and thus it happens that children who have no organic defect of the brain, but who have failed to develop intellectually because they are hard of hearing and cannot talk, may find their way into institutions for imbeciles and idiots because of mistake in diagnosis. Partial deafness in young children or deafness for only a few sounds is sufficient to interfere with the normal development of speech, and the child failing to understand general conversation gradually stops listening, and the brain finally loses its power to comprehend the meaning of spoken language. Dr. Makuen suggested in addition to the usual and well-known methods for improving the peripheral auditory apparatus, a course of training for the development of the central perceptive faculties by regular systematic training and education. He said, that children are sometimes intellectually deaf and the treatment for these cases consists in the frequent repetition of words in more or less close approximation to the ears, after the manner first suggested by Urbantschitsch, of Vienna. An interesting case was reported, illustrating the various points in the paper, of a child who had been born deaf and dumb, and who had actually been taught to hear and speak by this treatment.

Suprarenal Gland in Surgical Shock.—Dr. Alex. R. Craig, of Columbia, described two cases. The first was a compound fracture of the elbow caused by a gunshot wound six hours before his admission to the hospital, at which time, he was pulseless, cold, cold sweat, pupils dilated and labored breathing. The injection of three pints of normal solution, in the first and third of which was one dram 1 to 1,000 solution of suprarenal extract was followed by a very favorable reaction. The second case was a compound fracture of the skull in the right parietal region, caused by being thrown from a freight train, in which case similar results were obtained.

Boils.—Dr. George W. Guthrie, of Wilkesbarre, said that boils are caused by infection of follicles of the skin by pyogenic bacteria; the same laws govern their growth and development, as in the cases of the most serious infective inflammation. There are several predisposing causes: coarse, unclean skin; large follicles; slight traumatism of the surface; anything that lowers the vitality; overwork, poor food, exhausting diseases, fever, albuminuria, diabetes. Under treatment, use whatever builds up the general system: proper hygiene, needed rest; also pay attention to the skin; as medicine, quinine possesses decided power in preventing pus formation. Abortive measures are of doubtful efficacy, and unwise meddling often causes much more harm than good.

Clinical Studies in Blood-Pressure and Shock in Traumatic Surgery.—Dr. Jonathan M. Wainwright, of Scranton, stated: (1) That there is one drug, morphine, of which the value is unquestionable. (2) The most effective treatment is the mechanical one, which suffices alone in many cases, and after it has been carefully applied, strychnine and digalin may possibly be of value. (3) Nitroglycerin, atropine and alcohol are inert or harmful, though alcohol is valuable in after condition. (4) Intravenous infusions are of real and great value. The efficiency of adrenal, in addition, is doubtful. The author also showed a series of charts illustrating the conditions of various patients.

Craniectomy in Microcephaly.—Dr. W. D. Teagarden, of Washington, recommended in the case of a child with a fairly nourished body and symptoms of cerebral irritation, the operation be performed as soon as possible after the minimum age, *i.e.*, nine months has been reached, believing the sooner the operation is performed the better, and that the mortality from shock will be small, if performed at that time, as compared with those cases in which it is done after emaciation has begun and the nervous system weakened by constant irritation of the nerve centers, reporting a case in which the early operation had seemed to be of great advantage.

Dr. Theodore Diller, of Pittsburg, felt that the theory upon which this remedy was based *i.e.*, that the sutures of the skull would not permit to expand and this prevented the development of the brain, was an erroneous one, and did not favor the operation.

Dr. T. H. Murdoch, of Hope, who for a number of years has had charge of the Western Pennsylvania Institution for Feebleminded Children, stated, that there were in that institution a number of children who had been operated upon without any apparent results, and believed that the supposed advantage accruing by opening the skull would be more than counterbalanced by the growth of cicitrical tissue.

Brain Tumor and Trauma.—Dr. Edmund W. Holmes, of Philadelphia, stated, that the pathology of these growths is not different from those in other parts of the body, and that with the exception of cysts, sarcoma and gumma are the most frequent. The upright posture renders the cranium more liable to injury, and in severe cases the diffusion of the force increases the dangers to the brain. The direct influence of the blow is how by the tumor appearing at the seat of the injury, the most vulnerable parts of the brain being, therefore, the most subject to tumor, although by reason of concussion and contercoup deeper parts may be affected. The fact that the brain is so well protected from without against infaction, so long as its outworks, the scalp, the skull and the meninges are intact, militates against the bacterial origin of tumor and favors the belief in the cellular, nutritional and formative elements as causes of the growth.

Acute Gastric Dilation.—Dr. Theodore B. Appel, of Lancaster, reported three cases of this condition; the first being that of a male seventeen years of age, who had sustained a fracture of the left femur by a bank caving in on him; the second case was that of a woman, forty-two years of age, and followed four days after an operation for fixation of the left kidney; the third was that of a male, twenty years of age, neurotic, and with a marked history of catarrhal gastritis, who after about a week's illness following indiscretion in diet, associated with alternate diarrhea and constipation, abdominal pain, subnormal temperature and rapid pulse, followed about an hour afterward by a rectal hemorrhage of a quart of blood, which was succeeded by vomiting. The first two cases terminated fatally, and the last recovered. Absolute rest to the stomach, relief of distention of the stomach, rectal feeding and strychnine hypodermatically were recommended.

The Cause of Death in Operated Cases of Intestinal Perforation Occurring in Typhoid Fever.—Dr. J. Hartley Anderson, of Pittsburg, reported twenty-one laparotomies, one being for typhoid appendicitis with peritonitis; another of peritonitis from infection of the mesenteric lymph gland; and another to obstruction due to a mass of round worms in

the ileum. He described, in detail, the operation, and stated as the primary causes of death following, 1, shock; 2, toxemia of peritonitis; 3, devitalization of the body by fever. He contrasted the value of local and general anesthesia, and called particular attention to the danger from toxemia from the contents of the paralyzed bowel.

Cæsarean Section.—Dr. G. W. Wagoner, of Johnstown, reports history of a Slavish woman, aged thirty-four years, who when admitted to the hospital, after being several hours in labor and unsuccessful attempts to deliver her, presented the following condition: all parts normal; os fully dilated, child presenting transversely with the right shoulder impacted in the superior straight, and the right arms prolapsed, pains frequent and excessively strong. After repeated unsuccessful attempts at version under complete anesthesia, rupture of the uterus seeming imminent, Cæsarean section was performed, following which the patient progressed favorably and was out of bed on the twenty-sixth day.

Congenital Elongation of the Left Lobe of the Liver.—Dr. Levi J. Hammond, of Philadelphia, reported the case of a woman, thirty years of age, who had suffered for eight years with pain, pulling and pressure in the epigastrium, worse when lying down on the back. At operation, the left lobe of the liver was found to be extended entirely across the lesser curvature into the left hypochodrium, which was flattened out at the extremity over the spleen. This elongated lobe was sutured to the abdominal wall, and this was followed by an uninterrupted recovery.

On the Advantages of Performing Capital Operations in Certain Cases Without Anesthesia.—Dr. J. J. Buchanan, of Pittsburg, gave the following indications for the performance of operations without anesthesia: (1) Profound septic infection; (2) severe collapse from loss of blood and shock; (3) fecal vomiting with liability to drowning during operation of aspiration pneumonia subsequently; (4) collapse or compression of lung with liability to respiratory failure; (5) obstruction of esophagus; (6) advanced kidney disease with liability to anuria; (7) case of performance with minimum of pain. He gave an extensive list of operations he had performed in the presence of these indications, without anesthesia, including laparotomies for appendicitis, intestinal obstruction, visceral exploration, colostomy and intraperitoneal abscesses; amputations of thigh, leg, arm and forearm; ligature of arteries for aneurism; craniectomy for depressed fracture of the skull; wiring fractures patella by open incision; operations on chest wall, trachea, perineum, prostate and bladder; herniotomy for strangulation; operations for radical cure of hernia and intestinal resection. He emphasized the comparatively slight pain usually produced by even formidable operations and the great tolerance and cooperation of the patients, even children, foreigners and delirious patients. He stated that the surgeon should always have sufficient reason for withholding the anesthetic and should always secure the cooperation of the patient if he be of a reasoning age. No restraint is necessary or should be employed. Promise of anesthetic should be given if pain should be beyond endurance. Fulfilment of such promise is rarely required.

Professional Responsibility in Accident Cases Involving Litigation.—Dr. John B. Roberts, of Philadelphia, stated that the experience of the public had caused a justifiable distrust of surgeons employed by corporations as well as of experts paid by patients endeavoring to recover damages. Medical men could do more than other citizens to dispel this doubt as to the reliability of professional testimony. The duty of the medical attendants employed by the party sued, and that of the doctor of the patient injured are identical. The duty of each is to obtain promptly a return of health and a just settlement of the claim. Many unjust verdicts against railroads and other corporations are due to the patient becoming neurasthenic or hysterical because of the unwise, ignorant or dishonest suggestions of attending physicians, lawyers and friends. Immediate and careful examination, accurate record of the patient's statements and the symptoms at the time of injury, the avoidance of injurious suggestions with prompt institution of scientific treatment, and an early settlement of damages will diminish litigation and hasten the recovery of the patient. The doctor should make several examinations. He should remember that disease may exist before injury; that disease may follow injury, and yet, not be due to it; that the patient may be mistaken, and not dishonest, and that hysteria and neurasthenia are common conditions, existing sometimes with organic lesions without being connected with these lesions. Dr. Roberts believed that corporations liable to be sued would save money by always employing experienced practitioners to examine the injured patient early, in company with the medical attendant, and by insisting upon at least two such examinations. Delay in settlement, too many examinations, unwise suggestions of friends and numerous conferences with lawyers are often productive of traumatic neuroses, and have unjustly drawn thousands of dollars from corporation treasuries.

BRITISH MEDICAL ASSOCIATION.

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Section on Tropical Medicine.—*Continued.*

(Continued from Page 768.)

The Anti-Malaria Experiment at Mian Mir.—Ronald Ross, Professor of Tropical Medicine, University of Liverpool, said that the anti-malaria experiments at Mian Mir has been described in three reports, namely, one by Stephens and Christophers, one by James, and one by Christophers alone. The first, apparently written early in 1902, deals merely with some preliminary thoughts and observations, and he therefore did not propose to examine it here, beyond remarking that it clearly defines the object of the experiment which was then about to commence. That object was "to demonstrate by test operations" the "utility of all anti-malarial measures," particularly the destruction of *Anopheles* larvæ. The actual operations and their results are detailed in the subsequent reports of James and Christophers; and with regard to those, he made the following criticism: (1) The profession is not convinced that mosquito propagation at Mian Mir was really suppressed to the extent claimed, even over the small radius of half a mile; (2) the test employed for detecting reduction in the number of mosquitoes consisted of nothing but the formation of a personal impression unsupported by definite figures, and was therefore neither delicate enough nor convincing enough for the purposes of a formal and important experiment like this one; (3) the figures given regarding variations in the amount of malaria are not sufficient to enable one to form any

opinion one way or another; (4) several of the statements contained in the reports appear either to be contradictory or unintelligible, or to involve mechanical impossibilities; (5) even if we admit the thoroughness of the work done and the validity of the tests used, the whole experiment is still open to the final criticism (*a*) that it might not have been continued long enough, and (*b*) that the radius of operations might not have been large enough. He therefore thinks that the sweeping conclusions placed at the end of Lieutenant Christophers' report are not supported by the evidence which he and Captain James have published. They are not entitled to claim any more than is contained in the following sentence: "That after operations extending to a half-mile radius, lasting a year and a half, and (apparently) costing between two and three hundred pounds, no very large reduction in the number of mosquitoes or in the amount of malaria was, judging wholly by their own personal impressions, effected." Owing to the omission of a financial statement for 1903, one can only estimate the cost given above. The considerable sum spent on bricking the watercourse is not included, as it seems to have been more or less useless; probably a few pounds' worth of oil would have done as well. In these remarks he has confined himself to a textual commentary and has not dealt with the broad principles which govern the prophylaxis of malaria, and which, though self-evident enough, require a more or less mathematical treatment for their formal demonstration. The logical basis of the great measure of mosquito reduction is absolute. There is no doubt whatever that in any locality one can reduce mosquitoes to any percentage one pleases, provided their propagation is arrested to a sufficient degree and within a sufficient radius. This proposition, like the multiplication table, does not require experimental proof, and is incapable of disproof. If experiments would appear to disprove it, the experiments and not the proposition must be wrong.

Experiment is required, not in support of the general principle, but only in order to obtain certain unknown constants. One still has to determine (*a*) the radius of operations required to reduce the density of a given species of mosquito to a given percentage; and (*b*) the percentage of mosquito reduction required in order to obtain ultimately a given percentage of malaria reduction. But experiments directed to this end must be of a true scientific quality; they must be prefaced by a mathematical inquiry and be executed by means of rigid tests applied by the brain as well as by the hand. In the meantime, one may rest assured that the smallest work against malaria will not be without its reward. The oiling or drainage of a single pool, the cinchonization of a single person, and the "proofing" of a single room must and will perform their small quota of good. If more than this can be done, let it be done; better results will follow. But if local authorities wish to clear the malaria in a large town or cantonment they must be prepared to spend money on the work, just as they would for a new water supply or sewerage system. The example of Ismailia is always before them. The road leads straight forward. Work like this at Mian Mir only tends to arrest enthusiasm in the cause without really adding anything definite to our knowledge.

The Results of the Campaign Against Malaria in Mian Mir.—Captain E. P. Sewell made this report in which he said that the results were not satisfactory. The causes of failure he had summarized as follows: We can only conclude that the campaign has up to the present proved a failure, and the cause of this failure is not far to seek. The operations were doubtless efforts in the right direction, but were conducted on a scale utterly inadequate to make any impression on an evil of such a magnitude as that against which they were directed. At the outset, it was a mistake to attempt to treat the R. A. lines as an isolated area. They cannot be treated as such, and any factor which affects the rest of the station is bound to affect a part of it, which is not separated by any physical division, but is in direct continuity and subject to the same influences.

Secondly, any plan which aims at the reduction of malaria in Mian Mir must have as its basis the entire abolition of the irrigation systems, and the clearing off of all watered crops in the cantonment, and around it for the distance of at least one mile.

Thirdly, although the operations included the filling up of certain pits and holes and the draining off of water from low-lying patches of ground, a few minutes' acquaintance with Mian Mir after a heavy shower of rain would convince any one of the utter inadequacy of such local measures in one corner of the cantonment. There was nothing to prevent the *Anopheles* breeding in any of the numerous pits and ditches outside the area, and flying a few hundred yards to the buildings within the area.

To meet with any success a campaign against malaria must be on a very much larger scale. Nothing short of the complete leveling and draining of the whole cantonment and its environments, and the total abolition of irrigation and irrigation channels in and around the station is at all likely to cause any appreciable difference in the amount of malaria in Mian Mir.

Unfortunately these drastic measures involve considerable expense. The stoppage of irrigation would entail great loss to the zemindars, and the compensation paid to them for the deterioration of their land and loss of crops would amount to a large sum of money, which local funds are quite unable to meet, and which the Government of India have hitherto shown no disposition to grant.

Prophylaxis Among Troops.—Andrew Duncan proposed to limit his remarks to the prevention of malaria amongst the troops in military expeditions, and more particularly to the mobile columns of the same. The preponderating effect in disablement that malaria causes in campaigns has even been manifest. It will suffice to mention as examples the Ashanti expedition of 1896, in which one-half of the troops employed were placed *hors de combat* by African remittent fever; the Spanish-American war, in which out of 13,657 men in hospitals at Cuba 2,014 were causes of malaria; whilst in our Burmese, China, Abyssinian, Looshai, Duffla, Malay, and Afghan wars, amongst others, malarial fevers either headed the list of admissions or took the second place. What, then, are the means whereby we may prevent this large disabling influence?

Before proceeding to the more especial means of prevention in accordance with the true etiology of malaria, he first drew attention to the avoidance of the predisposing elements in matters connected with: (1) The selection of the men. (2) The age of the men. (3) Race. (4) The season for operations. (5) The clothing. (6) The period of marching. (7) The campaign grounds. (8) The food. (9) The precautions at night.

Selection of Men.—First in the selection of men. Here it must be borne in mind that previous attacks of malaria render the subjects of them more prone to future attacks. Hence the medical histories of a regiment must be closely scrutinized. For example, in the Duffla expedition of 1874, the Sixteenth M.I. had for the eleven months previous to the outbreak of hostilities suffered greatly from "fever" in Assam: the

Forty-fourth L.I. had for seven months before the expedition been stationed in the malarious plains also of Assam; in the campaign the Sixteenth M.I. had 29.06 per cent. admissions for malarial fevers, the Forty-fourth Assam L.I. 18.40 per cent. for the same cause, rates far above those of the other regiments not presenting the malarious history which had admissions ranging from 3.60 per cent. to 7.35 per cent. only. Again, in the Afghan war my old regiment, the Fourteenth Sikhs, one of the finest regiments in the Bengal Army, suffered greatly from malaria; previous to the campaign they had been for three years stationed in the malaria-stricken Peshawur Valley. But not only does a malarious history predispose to malarial disease, but it also powerfully influences the onset of other diseases, especially amongst native soldiers—for example, pneumonia—it is also one of the common causes of cardiac dilatation. A regiment with a clean malarial history presents a great contrast to those cited above. I was some time in charge of the Twenty-third Pioneers, in the Afghan campaign. They had come down from the hills of Simla in rude health, and no regiment during the war gave a better medical history. Hence one learns that regiments that have suffered markedly from malaria previously should not be chosen. The severer and more fatal forms of malaria never, as a rule, attack those previously immune from it.

Age.—Regarding age, it has been found that young soldiers and recent recruits suffer more than their older comrades. This was well shown in the Ashanti expedition of 1895-6.

Race.—Respecting race, it has been found that the negro race possesses the greatest immunity; in the War of the Secession in America, negro troops suffered the least from malaria, while a like experience was obtained in the Mexican war.

Season.—As regards season, meteorological influences speak with no uncertain voice. The end of the hot season in the tropics, when great alternations between the morning and evening temperatures occur, is very predisposing to malaria; again, the most dangerous time in the United Provinces in India is at the drying up of the rains. Hence this period of the year should be avoided if possible for military expeditions. A striking example of the above facts was shown in Ashanti in 1873. Here previous to the arrival of Sir Garnet Wolseley certain military operations had been carried on in the unhealthy season of the year. The Marines became so stricken with malaria that they had to be sent home, the mortality of the strength disembarked being 17.30 per cent. Sir Garnet operated in the succeeding healthy season, and the mortality for the strength was only 3.14 per cent.

Clothing—Respecting clothing, flannel should be worn. Khaki cotton drill is not a good material to wear. At my recommendation in Afghanistan the men of the regiment were given a woolen jersey each, and the admision for malaria at once decreased. Cotton drills become damp and clammy in a humid climate. In the Perak expedition, for instance, it was a great source of fever. Flannel protects against the great alternations of heat and cold, of the day and night temperatures, inasmuch as by it a more equable temperature is insured.

Marching Periods.—As regards the period of the day for marching, some authorities, such as Morache and Sanderson, advise not to march in the early morning. The late Professor Parker recommended doing so in the afternoon in hot malarious climates. He would, however, differ from this teaching on account of the danger of sunstroke. He never observed any ill effects from marching in the early hours in Afghanistan, while the men were far more knocked up whenever they did march in the afternoon. In Ashanti also it was found that although malaria was most powerful in the early morning, yet less harm occurred when marching in these hours than when proceeding for a length of time in the sun. The men should always have a meal of coffee and bread previous to setting out, and should also smoke in moderation, as Sanderson found by experience the good effect of tobacco in warding off attacks of malaria when marching in the early morning. At the end of the march, sitting down in wet clothes should not be permitted, and arrangements should be made whereby the men always have their great-coats handy. In the Afghan war the Fourteenth Sikhs were without their great-coats, and for nearly three weeks slept on the ground with only their ordinary uniform. Malarial fever was exceedingly prevalent amongst them. The cholera belt should always be worn.

Camps.—As regards the camping grounds, the exigencies of the military operations must of course always be of chief weight. But as showing the influence of healthy camps over the reverse, it may be mentioned that during the Zulu war the second division enjoyed a high state of health, being encamped and operating on high bracing uplands. The first division, on the contrary, was on the hot swampy coast line, and suffered much from fever. The American War of the Secession gave us a striking example of this in the force occupying the Atlantic coast: where there were huge alluvial tracts the intermittent fever-rate was 194.03 per 1,000, as against 121.77 for the Pacific region, where only a narrow strip of land intervened between the sea and the mountains. Again, especial precautions should be undertaken where the necessities of warfare entail much disturbance of the soil, as in making fortified places. This was shown in the large amount of malarial fever that attacked the men in the Zulu war during the erection of Fort Chelmsford. In the French army, again, at Madagascar, the men employed in road-making died like flies.

Food.—Turning now to the food of the men, the ration must be sufficient, and it should not be a monotonous one. Livingstone in Africa found plenty of wholesome food protected his men more than quinine. Tea and coffee should be as far as possible habitually drunk, both on the march and in camp. Koch recommends that all water be boiled in the prevention of malaria. In the Niger campaign the only white officer who remained free from the disease boiled his water. The late Sir Henry Stanley used to emphasize the importance of sterilizing water in combating malaria. In the Terai the Forest Department, by constructing deep masonry wells, have enabled their employés to remain permanently at work at the station at which they had formerly to be relieved periodically every fortnight on account of the deadly malaria.

Sleeping Places.—With regard to the precautions to be taken at night: where arrangements can be made, the men should not sleep on the ground. In the Spanish-American war it was reported that "nearly all those who slept on the ground after the battle of July 1 to 3 contracted some form of malarial fever, the worst cases being in those who had to sleep on wet ground with only their army blankets for bedding. Every one of a number of men who slept on wet ground at a certain spot near 'Bloody Bend' died later of pernicious malaria." Mr. Sanderson, whose life was spent in the jungles of Chittagong after elephants, attributes the fact that he was remarkably free from malaria to two facts: (1) that he always slept off the ground on a bedstead, and (2) that he always slept within mos-

quito nets. This last fact brings us to the methods by which we may attack the *fons et origio mali.* Malarial fever may be prevented in three ways: (1) by malarial protection against the infected mosquitoes; (2) by destruction of the infected mosquitoes; (3) by prophylactic drugs.

Mechanical Protection.—With regard first to mechanical protection: any one who has been on a campaign must recognize the fact that for an army on the march, protection by mosquito nets is out of the question. What chance would there be for the net remaining intact during the daily packing and unpacking of the impedimenta. Again, in these days, when one's luggage is cut down to a minimum, so that a tent and portable bedstead are even out of the question, how could a mosquito net be fixed up? The officers of the force might, perhaps, arrange for such, but does any one imagine that Tommy Atkins would take care of his net? The destruction of infected mosquitoes is also out of the question on the line of march. There remains, therefore, the protection to be obtained by the administration of prophylactic drugs. There is a vast amount of evidence from all parts of the world in favor of this method. There is also a certain amount of evidence showing this method to have failed. Thus it is curious that both in the Ashanti war of 1873 and in the last one, the principal medical officers did not find the practice of any value. The same occurred in the Malay war of 1875-6. In the Gambia expediton the men taking quinine had as much fever as those not taking it. But, on the other hand, there is overwhelming testimony in its favor. Time will not permit me to give all the instances in which it can be found to be beneficial to give prophylactics. What prophylactic should be used? During the latter period of his service in India he made comparative trials of fifteen different antimalarial drugs. The experiments were comparabe, as they were all made on one race of men, namely, Goorkhas, and the men were all in the same station. The result showed that quinine was *the* drug *par excellence.* Next to quinine, powdered pine bark was most successful. Narcotine, recommended by the late Sir William Roberts, was disappointing. Arsenic he found to have no antimalarial action. It has, however, been found effectual by other observers such as Crudeli and Ricchi in Italy, Downie in India, and Leslie in Africa. Sulphur and hyposulphite of soda, recommended by Dr. Schmidt, were tried in the Mauritius epidemic of 1866-7, but found to be of no use.

(To be Continued.)

AMERICAN PEDIATRIC SOCIETY.

Sixteenth Annual Meeting at Detroit, Mich., May 30 and 31, and June 1.

(Continued from Page 814.)

Lobar Pneumonia Occurring in 118 Cases in Infancy.—These cases were presented by Dr. J. L. Morse, of Boston. It was his opinion that lobar pneumonia occurs more frequently in infants than is commonly supposed to be the case. In analyzing his cases he had observed that the onset was not as violent as one would generally suppose, usually beginning with fever and a cough, often with vomiting, but not frequently with a convulsion. The patient was often apathetic and drowsy. He had found that the left lower lobe was the one most often involved, next in frequency being the right upper and right lower lobes, and the entire lobe was more often involved than a part. The involved area was usually larger in the fatal cases than in those who recovered, but the part involved seemed to be about the same. 12.8 days was the average duration of fever in the cases that were uncomplicated, but had a fatal outcome; eight days was about the average of those cases who recovered. The highest temperature ranged from 103° to 106° F. Crisis was more common in the second year of life than in the first, and the temperature fell by crisis in more than half the cases. Remissions and irregularities of temperature occurred very often, but pseudocrisis was very uncommon, as was also collapse during the crisis. No patient died whose respirations were lower than 55, but the usual rate was between 55 and 80, and even when above 55 the respiratory rate seemed to have no effect upon the mortality. The rate of pulse varied from 150 to 170. In nearly one-fifth of the cases there was complicating otitis media, and empyema was a complication in about eight per cent. of the cases. The age of the patient and the amount of lung involved greatly influenced the prognosis, as the mortality was almost twice as great in the first year of life than in the second. If the temperature did not rise above 103° F., the pulse above 140 or the respiration over 55, the prognosis was good, but above these limitations it became grave, and the amount of increase seemed to have little influence on the chances of a fatal outcome.

Dr. F. S. Churchill, of Chicago, told of the case of a bay of two months who was attacked by pneumonia, the culture showing the pneumococcus and the smear the influenza bacillus. Although the infant survived the first attack, another, six weeks later, terminated fatally, but the second time the culture did not show any influenza bacilli. As the combination of these two infections is usually fatal in adult cases it was remarkable that an infant should have survived in the first instance. It was Dr. Churchill's belief that lobar pneumonia is much more common in infants than is ordinarily supposed to be the case, and that its presence is often overlooked by careless examiners.

Dr. L. E. Holt, of New York, had found the left lobe only affected in a series of 16 cases, and it was his experience that, providing the infant had been in good physical condition up to the time of the onset of the disease, the prognosis was good, if but one lobe were involved, and the pulse, temperature and respiration did not matter so much.

Dr. S. S. Adams thought the mortality rate mentioned was too high, as his private experience had been that death occurred only in about ten per cent. of cases. He advised baths only in the most extreme cases.

Dr. W. P. Northrup declared that in a few years fresh wholesome air and plenty of it would be used as a stimulant and antipyretic.

Dr. Morse stated, in closing, that he had especially wished to emphasize the fact that lobar pneumonia in infants was far more common than was ordinarily supposed, and to call attention to the fact that the rapidity of the pulse rate and respiration were not always dangerous indications.

Infant Acute Pyelitis.—Dr. R. G. Freeman, of New York, said that the acute pyelitis of infancy was sufficiently rare to pass unnoticed for a number of weeks, because the profession generally was unfamiliar with its manifestations, no account of the absence of local symptoms indicating the location of the disease. Female children appeared to be the most frequent victims, and infection from the genito-

urinary tract seemed likely, although the fact that many cases come on after intestinal disturbances, and the frequent association of the bacilli coli communis, would lead one to suspect infection from the alimentary tract. No evidence that the pelvis of the kidney was the location of the difficulty is given by the clinical manifestations. There are usually abnormal movements of the bowels, high temperature with marked remissions, sometimes accompanied by chills. Because it is a rather difficult matter to secure satisfactory urinal specimens from babies, he believed that this diagnostic method was too often neglected. Treatment was easy and harmless, consisting of neutralization of the urine. He reported the case of a male infant who gave some evidences of urethral irritation at the commencement of the attack, which had been preceded for several weeks by mild digestive disturbance. The attack lasted for three weeks, the temperature being irregular and very high toward the last, associated with nervous symptoms. Treatment was instituted on the twenty-second day of the attack, and the child made a complete recovery in eight days, remaining perfectly healthy.

Dr. J. L. Morse said he had no trouble in obtaining specimens of babies' urine for examination. In the hospital in Boston where he had gone on service the examination of the babies' urine was made a routine practice, and there were almost always some cases of acute pyelitis among the infants under treatment there, from which circumstance he judged that the frequency with which we meet this condition depends largely upon how often the urine is examined. If pus were found it was sometimes hard to tell whether it came from the kidneys or the bladder; if he saw spindle and caudate cells he referred the trouble to the kidney, if squamous cells were present it was probably in the bladder. It was, of course, a new field of investigation, but in his opinion nearly all cases were due to a colon bacillus. He had twice found tubercle bacilli in the urine, although tuberculosis was present in the kidney, and nowhere else.

Dr. Isaac A. Abt, of Chicago, reported a case of acute pyelitis where the Shiga bacillus was discovered in the urine. This would also open up a new field of investigation, as to whether this bacillus could be found in the urine.

Acute Myocardial Insufficiency in Certain Diseases of Children.—Dr. F. Forchheimer, of Cincinnati, said that a large number of acute myocardial insufficiencies developed in connection with the infections of childhood, and setting aside the possible fatal termination, there was the consideration of the lasting effects upon those children who survived. There were cases where such damage was done to the heart, as to permanently impair its function, although this condition might not be discovered until some extraordinary call was made upon it. The involvement of the myocardium was a fact now accepted by all in every case of pericarditis or encarditis, from which it could be seen how very likely acute myocardial insufficiency was to develop. The first symptoms to be noted was usually a diminution in heart force and arrhythemia, next dilatation, first of the left heart, then of the right, with insufficiency of their respective valves. Noticeable increase in the size of the liver follows the serious affection of the right heart. The author had seen cases where the liver descended to the level of the umbilicus. Weakness, tachycardia or bradycardia, irregularity of heart and pulse impulse, a broadening of the heart dulness and bruits, most commonly over the mitral and the tricuspid areas and the apex, but sometimes also over the base he regarded as the most usual symptoms. Among the acute affections he thought diphtheria most liable to cause myocardial insufficiency, generally making its appearance about the second or third week. Heart death in diphtheria is not always caused by pure myocarditis, at least two other processes may complicate it. The diphtheria toxin may affect the vasomotor centers resulting in dilation of the blood vessels, and retarding the proper propulsion of the blood, or, as it has been perfectly established that in diphtheria the vagus is often affected, this affection of the vagus may give rise to arrhythmia. Second to diphtheria, the author had experienced the septicemia of influenza, as a frequent cause of myocardial insufficiency. He had observed some cardiac changes in all the cases which had come to his attention.

Absolute rest was the first principle in the treatment of uncomplicated myocardial insufficiency. Predisposing causes must be controlled, and convalescence should be under most careful observation. If laxatives are needed those of violent action should be avoided, but strychnine and the digitalis group of drugs might be used depending on the amount of myocardium affected, while stimulants might also be indicated. In his own experience he had been able to reduce the pulse rate of one child from 140 to 60 by means of ice bags upon the abdomen to stimulate the splanchnic reflex, and saline transfusions in the beginning, to keep up the heart's contractions, with hypodermic injections of adrenal extract repeated every two hours. Except in the case of angina attacks nitroglycerin should never be employed. After the most acute symptoms had passed it was the author's custom to administer sodium salicylate and caffeine, alternating every two hours with the adrenal extract which was thus gradually withdrawn.

Dr. Jacobi stated that it was only since Engelman, of Boston, had shown the importance of the heart muscle aside from the influence of the nervous system that the necessity of studying the myocardium and its diseases had been generally recognized by physicians. It was now an acknowledged fact that a myocarditis, an endocarditis and a pericarditis might all three exist at once. Sometimes one comes in contact with an old cicatricial condition, but there are two forms of the condition, real interstitial inflammation and a parenchymatous degeneration manifesting itself under varying forms. He advised strongly against the use of digitalis as causing contraction not only of the heart, but of the arteries as well. He usually relied in such cases upon opiates such as codeine, and also made use of the iodides, and the application of ice bags.

Dr. Forchheimer stated in closing that his object had been to advocate some definite form of treatment in both chronic and acute myocarditis, and that he had endeavored to present two clinical pictures, one where myocardial insufficiency was due to a simple myocarditis and the other where it occurred as a complication.

THIRD DAY.—WEDNESDAY, JUNE 1.

Forty-Three Cases of Asthma in Infants and Children.—The analysis of 43 cases of asthma occurring in children under twelve was presented by Dr. L.

E. La Fetra, of New York. Divided according to the age of occurrence, eleven patients were under one year old, eight between one and two years, nine from two to five years, and fifteen from five to twelve years of age. The histories given were not sufficiently reliable to be of use for statistical purposes, but family history of asthma, rheumatism, tuberculosis or nervous affections was obtained in most instances. There were no Italians, and only two negroes among the patients studied, which the author regarded as peculiar, as one would naturally suppose that rickets would be an important predisposing factor, as is usual in the case of bronchitis and spasmodic croup. Rickets had been present in only eight cases, according to the history given. Two of the children had been born prematurely, 20 had had bronchitis, seven bronchopneumonia; one had had chorea, and there were two cases each of atelectasis and enlarged thymus gland. In fourteen cases bronchitis had been the cause of the attack, in two it was after pneumonia, and other cases were the result of a fall, an attack of malaria, a drive in a cold wind a gastric indigestion, etc. The periods covered by the attacks varied from "every winter" or "every summer" to those of daily occurrence. There were not three cases which were distinctly worse in summer, and in only two were the attacks more severe by day. There was emphysema associated with the asthma in ten cases, five of whom had the square or barrel chest. Nearly fifty per cent. of all the patients had adenoid growths, which the author regarded as significant. In 20 cases adenoids were associated with enlarged tonsils and one had a congenitally high arched palate without adenoids. There are few difficulties in making a diagnosis of asthma, if it is borne in mind that children are subject to it. The speedy recovery with recurrences, and the increased number of eosinophiles shown by a differential count would easily confirm it. He considered a differential count of leucocytes to be also of value. The peculiar type of breathing was induced by a narrowing of the lumen of the bronchial tubes, but there were two theories in regard to the cause of this, namely spasm of the smooth muscle fibers of the smaller and medium sized bronchial tubes, and vasomotor tumefaction or paresis, a sort of angioneurotic edema of uticaria of the bronchial mucous membrane. The proper treatment could usually be inaugurated after a careful study of the history and influences surrounding the patient. Such conditions as nasopharyngitis, bronchitis or adenoids should be considered as predisposing factors and receive careful attention. All predisposing or exciting causes should be recognized and removed. Diet and hygiene were important considerations as the general condition should be toned up as much as possible, and such measures as cold sponge bathing, open air exercise, and abundant ventilation day and night were very effective. Regarding medication, in cases of long standing or for the subacute he favored iodide of potassium. Steam impregnated with creosote he had found very useful for inhalation in the case of infants, when the attack closely resembled capillary bronchitis. If the child could swallow he gave ipecac and tartar emetic, together with nitroglycerin. He had also had success in the administration of atropine until the face flushed. If there were evidences of gastric indigestion syrup of ipecac might be used to empty the stomach, which should be done without delay. In older children he had successfully used the old mixture containing morphine sulphate, belladonna and compound spirit of ether. If the attack is due to vasomotor paresis, in accordance with this theory vasoconstrictors might be given. He had found suprarenal preparation very useful in certain instances.

Central, Peripheral and Obtrusive Dyspnea.—Dr. W. P. Northrup, of New York, mentioned three types of dyspnea; first, that of peripheral origin, neuritis, probably diphtheric and paralysis of the diaphragm; second, that of central origin, infectious transverse myelitis and paralysis of the thoracic muscles of respiration, and lastly the obstructive type, due to accidental pressure of the air in the thorax, perhaps on account of faulty exploration by the needle, not resulting from obstruction of the larynx or nasopharynx.

Dr. C. G. Jennings spoke of a very interesting case reported by him at the Boston meeting. The clinical picture was at first that of attacks of coma, but this soon changed and asthma set in. The case was one of autointoxication.

Dr. Holt was of the opinion that the only reliable remedy for asthma in a child was a change of climate. He recommended improving the general condition of such children by the use of tonics as cod-liver oil and iron, and keeping them in the open air as much as possible. Attacks of asthma were very apt to follow whooping-cough or measles.

Dr. Abt spoke of the dangers of unskilful aspiration of the chest, and Dr. Caillé said he had seen pneumothorax occur twice as the result of such explorations.

Acute Leucemia.—This was the title of a paper presented by Dr. F. S. Churchill, of Chicago. He stated that nothing could be regarded as a cause predisposing to this affection except possibly tonsilitis, and this might as well be an effect as a cause. The disease was not peculiar to children, and it ran the same course with them as with adults. Its duration was sometimes as brief as four or five days, or on the other hand it might last five months. There was invariably enlargement of the spleen, although it was not uncommon to see this organ diminish in size just before death. The blood examination was the chief point of interest. The hemoglobin and the number of erythrocytes were diminished, and the number of leucocytes ran from 6,000 to 810,000. Approaching death was denoted by a falling white count. There was a marked decrease in the number of polymorphonuclears, and almost no myelocytes. The blood tended to turn to the fatal type, but only one case in 29 presented a hemorrhage. The differential count offered the only means of making an accurate diagnosis in leucemia. A fall in leucocytes was almost always the effect of an intercurrent disease. The true nature of leucemia is unknown and all treatment was unavailing. Believing that the disease was malignant in nature some had tried the spray, but with no good result, but bacterial examination failed to give any ground for this view. He regarded any treatment as justifiable in such an obscure and fatal disease, however, and thought that serum injections seemed to offer the most hopeful indications. As twenty-nine cases had been reported he regarded it as more common than is generally supposed.

Primary Sarcoma of the Liver.—A case of adenosarcoma of the liver in an infant was reported by Dr. L. Emmett Holt of New York. The child was

poorly nourished, and on the right side of the abdomen a large tumor was palpable, filling the entire half and extending beyond the umbilicus and down into the pelvis. The tumor was smooth-surfaced, soft and distinctly outlined. Further examination was negative. There was a temperature varying between 100° F. and 102° F. A puncture of the liver was made under the supposition that an abscess might be present, and a bloody fluid withdrawn, with liver cells and fatty droplets, but no pus was obtained. The surgeon called in made an incision under cocaine anesthesia, and came upon a mass of broken down material, into which a drainage tube was inserted. The child died of exhaustion two weeks later and at autopsy the liver was found to be 19 cm. long and 21 cm. wide, weighing 735 grams. No peritonitis or thickening was noticeable. Adenoma with sarcomatous degeneration in the center was revealed under the microscope. No metatases were found, but a bronchopneumonia and a pericarditis were discovered. Only two other cases in children have been so far reported.

Radiograph of a Thoraco-Abdominophagus.—This was presented by Dr. Samuel S. Adams, of Washington, the monster having come under the observation of Dr. H. B. Sheffeld.

Election of Officers.—The following officers were elected for the ensuing year: President, Dr. Charles G. Jennings, Detroit; First Vice-President, Dr. Charles G. Kerley, New York; Second Vice-President, Dr. J. Park West, Bellaire, Ohio; Secretary, Dr. Samuel S. Adams, Washington; Treasurer, Dr. J. Park West, Bellaire, Ohio; Recorder and Auditor, Dr. L. E. La Fetra, New York.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-first Annual Meeting, held at the Academy of Medicine, New York City, October 17, 18, 19 and 20, 1904.

THIRD DAY—WEDNESDAY, OCTOBER 19.

(Continued from Page 805.)

Twenty-five Cases of Pernicious Anemia.—Dr. Albert E. Woehnert, of Buffalo, read a paper in which he described the findings of 25 cases of pernicious anemia investigated under the care of Dr. Charles G. Stockton, of Buffalo. With regard to the microscopical findings, the blood of pernicious anemics looks much paler in color and in bad cases resembles roily water. There is a granular look as it flows, which reminds one of sand and water somewhat, and it would seem as though one were looking at individual corpuscles whose appearance is emphasized by their rarity. The viscosity of the blood is reduced and it flows more readily once it appears on the surface, while as there is a decrease of fibrin, its coagulation is delayed. The specific gravity of the blood is reduced. The hemoglobin is never reduced as much as the red cells and this sometimes gives a curiously deceitful red appearance to the blood. The most characteristic appearance is the increased size of the red cells. Poikilocytosis is noticed. Nucleated red cells occur very often and there may be curious granular appearances in the nuclear as well as the white cells. Sometimes the granules are so uniformly spherical in appearance as to resemble cocci. Sometimes they occur even in chains resembling streptococci and giving rise to the suspicion of actual microbic invasion. The tendency to take stains in various ways and so to give a varicolored picture is a very common characteristic of the blood of pernicious anemia.

Leucocytes in Pernicious Anemia.—Ordinarily the leucocytes are reduced in number. Whenever there are comparatively more white cells than red cells present, there must always be the suspicion that it is secondary anemia and not primary pernicious anemia from which the patient is suffering. In one of Dr. Woehnert's cases there was a distinct leucocytosis, however, shortly before the beginning of an intermission of the disease. As a rule, a reduction of the number of white cells is bad prognosis, while an increase in the number of leucocytes usually indicates that a period of improvement is at hand. Many of the white cells have atypical karyokinetic figures and at times two nuclei are found.

Etiology of Pernicious Anemia.—The more the picture of pernicious anemia is studied, the more is the physician forced to the conclusion that the disease is of toxic origin. There are many evidences of hemolysis. This blood destruction goes so far that the blood-making organs are not capable of meeting the demand for red blood cells, though many evidences are found in them of abnormal activity, and they endeavor to fulfil the unusual strain put upon them. The lemon-colored tint of the skin which is so characteristic of pernicious anemia and which occurs in all the cases, is due to the deposit of a certain amount of iron in the cutaneous tissues consequent upon the destruction of red blood cells and the consequent setting free of hemoglobin. There are many evidences in the internal organs of an accumulation of iron from the same cause. Whatever changes have been noted in the spleen and bone marrow, especially in the latter, are evidently secondary in character. It seems not improbable that before long the hemolytic agent, which is at work, will be discovered. Until then, the therapeutics of the disease are sure to be unsatisfactory.

Frequency of Pernicious Anemia.—Dr. James J. Walsh, of New York, said that undoubtedly many of the supposed rarer diseases occur much more frequently than was at first thought. Graves's disease, for instance, is by no means so rare as was considered to be the case twenty-five years ago. For a time statistics in this country seemed to show that diabetes was only half as frequent here as in Europe. The more careful gathering of statistics, however, has gradually brought our death-rate in the disease, especially in large cities, quite up to the standard in recent years. It seems not unlikely that many fatal cases of diabetes are still set down as nephritis or tuberculosis, these being the terminal stages of the affection. With regard to pernicious anemia, more and more cases are being discovered every year. So recently as last spring, Prof. Osler said that it was a surprise to him to find that even in good hands pernicious anemia was sometimes missed. Dr. Walsh spoke of Hunter's theory. In carious teeth a number of streptococci grew and were transferred thus to the stomach and the toxins manufactured during their growth were absorbed and proved actively hemolytic. He considered that especially streptococci were the offending agents in this microbic disturbance and suggested therefor as curative measures the most careful cleanliness of the mouth and of the gastro-intestinal tract.

Failure of Antistreptococcus Serum.—Dr. Walsh said that he had tried antistreptococcus serum very faithfully in one apparently favorable case but without success. The only result secured was a very

bothersome urticaria, which followed the injection of the serum on each occasion and for which nothing could be done. This patient had been improving when the serum was given, but the improvement did not continue and the dose was given but once a week. At the end of the sixth week she was in a very low condition and died a few weeks later. The most favorable medication in this case seemed to be the use of arsenic which on several occasions was followed by notable improvement, though it failed to be of any service at the end. There seems a general agreement now that carious teeth have nothing to do with the affection. Professor Osler announces that at Johns Hopkins the average cases of pernicious anemia have by no means unclean mouths and some of the cases have an even better condition of teeth than is normally found among hospital patients. Among the poorer classes of course the care of the mouth is by no means common, and in hospital practice it might be easy to assume that this neglect must be a common cause. It must not be forgotten, however, that pernicious anemia occurs quite often in private practice and in the better class of people who are of very cleanly habits.

Occupations in So-called Rheumatism.—Dr. James J. Walsh, of New York, said that vague pains, worse on rainy days, continued to be among the most frequent complaints treated in dispensary service and office practice. The old custom of attributing these pains to so-called muscular rheumatism, dependent upon an imaginary uric acid diathesis is gradually dying out. The number of remedies for uric acid diathesis is legion, but there is a growing suspicion that they are as little likely to do good to mankind as that other group of Scripture fame whose name was also legion. The question of the treatment of these vague pains must depend entirely upon their causation. As theory has failed in the explanation, it would seem advisable to go back to a careful examination of the patient. Dr. Walsh pointed out that many of the so-called rheumatic conditions are dependent upon various occupations and are really due to overuse of nerves when some toxic element is present in the circulation whether it be lead, alcohol, syphilis or some other foreign element.

Lead as a Factor.—In certain cases a low grade lead neuritis produces the tired feeling with discomfort on rainy days, which is sometimes mistaken for rheumatism. In one case seen, there was no other sign of lead poisoning, though the man was a painter, there was consequently considerable hesitation in attributing his condition to lead. During treatment, however, he fell and sprained his wrist and then a typical lead palsy with wrist-drop developed confirming the original diagnosis. That such things happen in diabetes neuritis is well known. It may be more or less latent for a good while, causing fatigue of muscle and vague discomfort, especially on rainy days, before the true cause and seat of the condition is discovered. Dr. Walsh pointed out that lumbago is quite frequently seen in tailors, especially those who sit in the old-fashioned position bent over their work. In them their lumbar nerves are used to maintain their position. People who lift heavy weights, especially the workers in iron foundries, bending their backs during their labor, are also prone to suffer from lumbago. Sciatica is usually more common among laborers who use their legs actively in their work. Shovelers, motormen, dentists and lathe workers are sufferers in this way. The mystery of why some people suffer and others do not still remains. It is evident, however, that some people are not built for occupations requiring the excessive use of certain groups of muscles, and if they continue to suffer from pain in them, the indication is for a change of occupation but not in the administration of the salicylates and other coal-tar products.

Rainy-Day Pains.—Whenever pains are worse on rainy days, this is at once thought to justify the diagnosis of rheumatism. It must not be forgotten, however, that affected teeth are also worse on rainy days and that a broken bone many years after union will still continue to be sensitive just before the beginning of a storm, while a dislocation usually continues to be a barometer for the rest of life. Even ordinarily healthy muscles are likely to suffer from fatigue and discomfort on much slighter provocation on rainy days. The fact of the matter is that a low barometric pressure invites blood to the surface and is sure to congest them with sluggish circulation and peripheral capillaries results. As a consequence sensitive nerves endings are pressed upon just at the time when lack of nutrition because of slow circulation makes them irritable.

Sedentary Occupations and Pains.—Painful conditions not infrequently develop in those who sit in bad positions. People who write much, not infrequently sit with one leg over the other in such a way as to cause the edge of the chair to press upon the sciatic nerve. In most people immediate discomfort is sufficient to cause any ulterior trouble. In some persons, however, there results a set of vague pains in the muscles of the leg and sometimes even in the knee.

Flatfoot and So-called Rheumatism.—Dr. Hughes, of Jamestown, N. Y., in discussing Dr. Walsh's paper, said that not a few cases of rheumatism in the feet were really flatfoot. In a certain number of cases, even where there was no giving way of the arch of the foot, the use of a support for the instep made persons much more comfortable than before. In general neurasthenia, there is often intense discomfort in the lower part of the back. In some patients this can be relieved by the use of a support for the shoulders. Dr. Hughes has seen sciatica develop as a result of awkward fatiguing positions assumed on the rifle range. These occur especially with positions on the face.

Alexander Operation.—Dr. James E. King, of Buffalo, N. Y., described a series of cases in which retroversion of the uterus was relieved by shortening of the round ligaments. The operation is available, however, not for such cases as develop pathological conditions, but as a mechanical means of holding the uterus in place. Where other pathological conditions exist besides the retroversions, the operation is likely to be a failure. Alexander's operation undoubtedly has a place, especially in young women, and as it is without danger, is almost sure to be retained in future gynecology. One unpleasant sequela of the operation is pain. This is usually unilateral and occurs most frequently on walking, though at times it is noticed even in a sitting position or as soon as the patient stands up. The cause of this seems to be some injury to the ilio-inguinal nerve, which runs close to the round ligament. The pain is most frequently seen in cases where suppuration has occurred, the nerve evidently becoming involved in the scar. Great care should be exercised not to wound this nerve, and as a rule there should be just as little manipulation of the tissues as possible. At times the operation seems to be a failure,

but this will usually be found to be due to the fact that the uterus sinks down too much, causing dragging pains. The use of a pessary, however, will usually relieve this condition. A certain number of Alexander's operations remain types of successful operation, but do not cure the patient. One unfortunate sequela is the occurrence of hernia. This is due to faultly technic in sewing up the canal or to suppuration. The canal should be sewed up just as in the operation for radical hernia. Suppuration of course must be avoided.

Passing of the Alexander's Operation.—Dr. H. O. Marcy, of Boston, said that when Alexander's operation was first introduced, he was an enthusiastic advocate of it. His success with hernia naturally made him take to it and he performed a number of the operations. Some had satisfactory and some had unsatisfactory results. In recent years he had ceased to do Alexander's operation and though it may be considered to have a place in gynecology, its usefulness is very limited and as now there is very little danger in opening the abdomen, which was one of the main reasons of the introduction of Alexander's operation in the pre-aseptic days, it now seems better to know just the condition that is present and causing the retroversion rather than attempt to correct it by an operation that so frequently failed.

Disadvantages of the Operation.—Dr. J. Hawley Burtenshaw, of New York, said that to one conversant with the anatomy of the female sexual organs, Alexander's operation ceased to have any definite purpose.

Function of the Round Ligament.—Dr. J. Riddle Goffe said that the round ligament has an important function. This is not to support the uterus, but to restore it to position when, after the emptying of a full bladder, there would be a tendency for the uterus to fall forward. It also keeps the fundus of the enlarged uterus against the abdominal wall and so avoids the discomfort that always ensues if intestines become inserted between the abdominal wall and the uterus. For retroversion of the uterus, shortening of the round ligaments will do very little. The first step if uterine retroversion is relaxation of the uterosacral ligaments. If this relaxation occurs, the uterosacral ligament must be shortened. This is not a difficult matter. They can be doubled upon each other and stitched together.

Iodine for Sepsis.—Dr. J. Hawley Burtenshaw reviewed the history of the use of iodine in the treatment of septic conditions. It was first used nearly twenty years ago by Alloway, who inserted suppositories containing from 10 to 20 grains of iodoform into the uterus in sepsis due to uterine conditions. The late Dr. Pryor put the use of iodoform in sepsis on a scientific basis and in 37 cases of puerperal sepsis had but four deaths. Of 27 cases treated without curettement by this method only one died. Of 10 cases that had been curetted before coming under Dr. Pryor's care, three died. Hence Dr. Burtenshaw has considered the advisability of introducing the introduction of iodoform into the abdominal cavity in septic conditions after operations. It had, however, proved very disappointing in practice. In Dr. Pryor's cases iodoform is absorbed so rapidly that he iodine reaction can be found in the urine in less than an hour. Dr. Burtenshaw was unable to demonstrate it either in the urine or feces and apparently it was not absorbed at all. Germs may grow on iodoform. This has sometimes been taken to mean that it is not a germicide. In the presence of animal secretions, however, iodine is set free and this proves eminently antiseptic. Dr. Burney Yeo, of London, has reported the absorption of iodoform through the skin. He uses it in the treatment of tuberculous peritonitis, employing equal parts of cod-liver oil and iodoform rubbed into the abdominal surface. He has reported a number of cures. Dr. Burtenshaw has found an extreme tolerance for iodoform on the part of septic cases. Sixty grains of iodoform may sometimes be used without the production of toxic symptoms.

The Presidential Address.—Dr. William Harvey Thornton, of Buffalo, then read the President's address, in which he insisted that the day of individual self-efficiency in medicine was past and the day of the Medical Society had come. As the result of association with members of the profession in medical societies, a marked change had taken place in recent years in the relations of physicians to one another. A sense of fraternal honor was making itself universally felt above any feeling of professional competition. Medical societies are useful not only by the information obtained by listening to papers, but by the stimulus of asociation for the physician's work and by the inspiration that is inevitably drawn from them. The members of a properly organized society are active and are continually giving off some of their energy to others, while the receptivity of members is also increased. Undoubtedly one of the most important things for professors of medical schools to insist upon with their students, is that they should join medical societies and take part with professional brethren in all movements for the benefit of the profession.

Medical Union in New York State.—Dr. Thornton said that undoubtedly the best interests for the medical profession in New York would be advanced by the union of the two at present existing organizations. Unfortunately it has been found that certain legal obstacles, which are for the present insurmountable, will prevent this union for a considerable period. In the mean time then, it behooves the members of this Association to work for the betterment of all association interests, so that when union does come, the way shall be paved for immediate prosecution of the best ends and purposes that will ameliorate professional conditions in New York. There is no reason in the world why union should not take place, and as the great body of the medical profession desires it, legal quibblers will not prevent it.

Antitoxin in Diphtheria.—Dr. Charles Gilmer Kerley, of New York, read a paper on how and when to use diphtheria antitoxin. It should be employed in large doses just as soon as the patient is found to have diphtheria. If the patient is seen on the third day of the disease, 3,000 units should be given regardless of the age of the patient. If after the third day, then 5,000 antitoxin units should be administered. This dose should be repeated in from eight to twelve hours if there has been no improvement. Improvement is considered to have taken place if there is a drop in the temperature and if there is a granular breaking down of the membrane. The dose must be repeated, however, every twelve hours, or with a little longer intervals if the symptoms do not improve. Dr. Kerley has used as high as 14,500 units and would use more if the symptoms did not abate. The doses depend not upon the age, but upon the amount of toxins present and upon the symptoms of the patient. In special forms of diphtheria as in laryngeal or nasal cases, large doses of at least 5,000 units should be employed from the

beginning and repeated every eight to twelve hours if necessary.

Intubation Cases.—Dr. Kerley considers that, in intubation cases 5,000 units should be given at once and repeated in a few hours. After 10,000 units are given, the patient should still be watched carefully, and if necessary more antitoxin given. There is no doubt now that antitoxin is perfectly harmless. It has been given in so many cases as to remove all suspicion of danger. Dr. Kerley has given it himself in hundreds of injections for curative purposes and thousands for immunization and has never seen a local abscess. In a few cases he has given it where there was no diphtheria under the suspicion of the disease, but it has produced no bad effects. It does not produce nephritis. The dose of antitoxin should not be regulated by the age of the person, but by its condition when first seen. There should be no hesitancy in giving large doses.

Success of Antitoxin.—Dr. E. D. Ferguson, of Troy, N. Y., said that antitoxin for diphtheria is the only modern medical novelty that he accepted at once. Before its introduction, he had 75 intubation cases without a single recovery. If patients did not die from the diphtheria, they died from the subsequent bronchitis, which was undoubtedly related to the diphtheria. Immediately after he began to use antitoxin, he had five successive cases of laryngeal diphtheria in which intubation was necessary without a single death. Later experiences had all tended to confirm his first impressions, and he believed most firmly that diphtheria antitoxin was a valuable remedy.

(To be Continued.)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirtieth Annual Meeting, held at Cincinnati, Ohio, October 11, 12 and 13, 1904.

(Continued from Page 810.)

PROCEEDINGS OF SURGICAL SECTION.

The Choice and Use of Medical Literature.—This was the subject of the President's Address, delivered by Dr. Hugh T. Patrick, of Chicago. He said the daily walk of doctors differed greatly. We had the family factotum, the conversational doctor, the lodge doctor, the church doctor, the society doctor, and the doctor deep in politics. They were good friends and good citizens, but really fine physicians (?). Not one of them. And not one of them knew or cared about good medical literature. The wise, skilful physician he would like to be, read a great deal. He selects his literature well and used it wisely. The selection of books was a task as delicate, a duty as significant as was the choice of drugs. Every book was a prescription for one's mental self. Progress meant expansion. No text-book doctor was an A No. 1 man. He must have the treatise, the system, the cyclopedia and the monograph. Of all books, the monograph was the best, and the worst. It must be properly selected and read with discrimination. In medicine there was no such thing as an authority. Every paragraph was to be adjudicated. Concerning medical journals, the speaker said: "Since to advise is more human than to confess, to find fault more spontaneous than to praise, to say don't easier than to say do, I venture first to advance a few of the don'ts in my mind. Don't admit to your presence a journal that is not perfectly straight and clean. Don't indulge in yellow journals, for such there are of deeper or fainter dye. Don't take a journal which is run as an advertising medium. Don't tolerate the journal that accepts abortive papers by underdone doctors. Don't waste time on journals abounding in short cuts. Don't pay much attention to columns of formulæ, notes on treatment, therapeutic hints, brief paragraphs on recent discoveries, and items on new drugs." In conclusion, four hints were given as to the manner of reading: (1) Systematically, to get up one subject well; to investigate it thoroughly in every way. Then take up another. (2) To read up fully on cases in hand. No case can be considered alone. It is always in relation to variant cases. (3) Reading to write, providing, of course, that the writer compels himself to produce really good material. Pursuance of these three plans produces a most desirable habit—the keeping of case records. This in turn stimulates reading, and enhances its value. Accurate comparison of experience ripens knowledge into wisdom. (4) To acquire the mental habit, or attitude, or aptitude of reading for reproduction. There is a vast difference between the acquisition of knowledge as a mere accomplishment, and as a means of action. It is well for us doctors to regard our store of knowledge not simply as an interesting museum of nature's wonders, marvelous to contemplate, but rather as an armamentarium, an orderly array of goodly weapons ready for instant use.

Surgical Tuberculosis in the Abdominal Cavity, with Especial Reference to Tuberculous Peritonitis.—This was the title of an Address on Surgery, delivered by Dr. William J. Mayo, of Rochester, Minn. In St. Mary's Hospital during the ten years from October 1, 1894, to October 1, 1904, 6,408 abdominal operations were performed; of these, 183, or a little less than 3 per cent. were for tuberculous lesions. Localized in intestine, 21 times; in appendix, 29; in Fallopian tube, 44; and tuberculous peritonitis, 89. Of the latter, not over fifty per cent. remained well, although 96 per cent were discharged improved or cured, giving a high percentage of relapses within two years. About four females were operated upon to one male. In seven relapsing cases in females, reinfection was found to arise frome tuberculosis of the mucous membrane of the tube. In all, 26 cases of tuberculous peritonitis in females were subjected to radical operation for the removal of tuberculosis of Fallopian tubes. In a few females an infecting focus was found in the appendix or cecum. In a minority the source could not be traced. In men a considerable number arose from tuberculous lesion of the appendix or cecum. Tuberculous peritonitis, like septic peritonitis, was due to a local focus. A considerable number of cases of tuberculous peritonitis were cured by nature. Simple laparotomy aided recovery by permitting of more thorough encapsulation of tuberculous products and by increasing the antituberculous serums in the abdominal cavity. Removal of the localized focus of infection in the tube, appendix, etc., would greatly increase the percentage of cures and prevent reinfections. If the local focus could be removed and was primary, a general cure might be expected. If secondary to a primary disease in the lung or other part of the body, ultimate recovery depended on curability of the chief lesion.

A Plea for Wider Knowledge Concerning Diseases Which Affect the Joints.—This was the title of the Address on Medicine, by Dr. C. Travis Drennan, of Hot Springs, Ark. The author urged the necessity of greater care in every instance in which a joint was

involved, no matter how insignificant such condition might appear. The usual case of acute articular rheumatism, gout and tuberculous disease could easily be recognized under ordinary conditions, but not so much could be said when one came to the early manifestations of arthritis deformans, so-called subacute articular rheumatism, and certain forms of gonorrheal arthritis. Under existing knowledge it was well-nigh impossible in certain cases to differentiate these diseases during their earlier manifestation. When the etiology of gout was written, in his opinion it would be shown to manifest itself primarily somewhere along the digestive tract. If we could get perfect digestion, we were in a position to get perfect assimilation, and with perfect assimilation, most assuredly we were in direct line to get perfect elimination. That there was a nervous element supervening in arthritis deformans, was a view concerning which he had a well-grounded belief.

Hospital Construction in American Cities and Towns.—Dr. A. J. Ochsner, of Chicago, in a paper with this title pointed out the fact that an enormous number of new hospitals had been established, and were still being established in every part of this country; that so far the new hospitals had almost all been built by architects who based their plans on the principles which govern hospital construction thirty years ago, at which time the theories of contagion and infection were wrong. Nothing was known about differences in purity of air at different levels. The elevator had not been perfected. It was not possible to make high buildings fireproof at a reasonable cost. These changes in our knowledge being of the greatest importance should change entirely the plans of hospital construction. The importance of proper location was discussed at length. The building should be so placed as to admit sunlight to all the rooms and wards. It should be accessible to the patients and their friends and to the medical staff. This could usually be accomplished without interfering with the other important conditions. The paper then gave a number of plans for hospitals intended for various purposes, the latter being those exhibited at the Louisiana Purchase Exposition by the author, associated with Mr. M. J. Sturn, architect. Stress was laid upon the fact that millions of dollars would be spent in the construction of hospitals in the immediate future, and that it was important that the subject be thoroughly studied in the meantime.

Radical Cure of Hernia.—Dr. Hal C. Wyman, of Detroit, Mich., read a paper on this subject. The problem of hernia had been so fully worked out in the inguinal and umbilical regions, that there was nothing to do now but to find the hernial opening, and stitch it up so that the bowel would stay where it belonged in the cavity of the abdomen. In any case of intestinal hernia it was a fair presumption that the intra-abdominal space was not large enough to contain the intestines, and the abdominal walls were insufficient to embrace the abdominal contents. It was reasonable, then, to assume that surgical intervention for the cure of intestinal hernia should include measures to reduce the volume of the abdominal contents, and to increase the size and strength of the abdominal walls. Masses of omentum and part of intestines must sometimes be removed to make room; and flaps must sometimes be dragged in to supplement the insufficiency of the muscles and fascias. Suturing must be complete, absolute, and without the tension that damaged and destroyed any of the tissues. Scrotal skin and fascia might be sutured into the large hernial openings with gratifying results by making an entirely new place for impingement of the intestines that would otherwise protrude. Many patients with inguinal hernia might be permitted to get up when they felt able, with great advantage in educating the abdominal muscles to perform their offices, so that hernias did not occur.

The Typical (Anatomical) Operation for the Radical Cure of Oblique Inguinal Hernia.—Dr. Alexander Hugh Ferguson, of Chicago, contributed a paper on this subject, which was accompanied by numerous and beautiful illustrations. Dr. Ferguson described his method of operating on these cases, a full description of which may be found in the current medical literature. So far as he could determine, approximately 2,200 cases had been operated on by his method, without the recurrence of hernia.

Dr. William J. Mayo, in the discussion said, that of 600 or more operations done in accordance with the Ferguson method, only three relapses had occurred, and he was uncertain as to whether these were really due to the Ferguson or Bassini operation.

Dr. H. O. Walker considered the Ferguson method rational, and the results good. He had operated by this method over a hundred times, and had had no recurrence of hernia. He spoke of two cases in which he did a perineal prostatectomy in addition to the operation for the radical cure of hernia at one sitting, with satisfactory results in both instances.

Dr. Emil Ries favored getting patients out of bed as early as possible after abdominal or hernial operations. He did not hesitate to let his patients get out of bed on the first or second day after operation, and had had no evil results therefrom. He had used the method of Kocher in a number of cases of inguinal hernia, the main point being inversion of the sac, and had had no recurrences following this method.

Dr. A. J. Ochsner said the Ferguson operation contained the successful elements of a herniotomy. The operation should be done without traumatizing the tissues severely. He emphasized the importance of not injuring these tissues by suturing too tightly.

Foreign Bodies in the Esophagus.—Dr. Carl E. Black, of Jacksonville, Ill., reported two obscure cases of foreign bodies in the esophagus in which a positive diagnosis was made by the use of the X-ray. He made extended remarks regarding the value of the X-ray in locating foreign bodies and assisting in their removal.

Spleenless Men; Report of Two Successful Cases of Splenectomy.—Dr. J. Henry Carstens, of Detroit, Mich., stated that splenectomy was indicated in selected cases of enlarged spleen, but not in all instances. The first patient had pain and distress for a year or two in the region of the spleen, with gradual enlargement. There was sudden rapid growth within three months, filling nearly the whole abdominal cavity. Emaciation was marked. Blood examination showed destruction and irregular shape of red blood corpuscles. A probable diagnosis of malignant growth was made. Operation disclosed it to be a sarcoma. Operation was followed by complete recovery, and to-day the blood is normal. In the second case, the onset was gradual, and there was an enlargement for six months. Splenic anemia was diagnosed. The leucocytes only numbered 1,200. There was extreme debility. Operation was performed, followed by complete recovery. The

blood was now normal, and patient had gained 96 pounds in weight since leaving the hospital fifteen months ago.

Operative Work in the Ureter Through the Author's Catheterizing and Operative Cystoscopes.—Dr. Bransford Lewis, of St. Louis, Mo., in a paper with this title, considered the subject in its three relations: As a practical and reliable procedure, as a diagnostic measure, and as a therapeutic measure. After alluding to his operative cystoscope, and the instrumental equipment connected with it—ureter forceps, scissors, dilators, irrigating attachments, etc., the author considerd diagnosis and therapy. The first patient, a male, in whom the diagnosis established was that of an inactive left kidney, while the right one was not only carrying on all the kidney functionation present, but contained numerous calculi of various sizes. Ureteral manipulations through the operative cystoscope removed a dozen or more small calculi, which he exhibited, but could not secure the escape of the largest, which was removed by lumbar incision. The patient recovered, notwithstanding the fact that the only kidney functionating was opened and cleaned out. The second case related was one in which small calculi had been removed by similar means in two sittings, a year apart, the stones being exhibited. The third case was one in which there had been severe and exhausting symptoms of ureter calculus, of sixteen years' duration. There were numerous consultations, and oft repeated attacks occasionally requiring the prolonged administration of chloroform. This patient was finally and definitely relieved, and had had no recurrence of the pain for nearly a year. A case of definite and severe stricture at the lower end of the ureter had been completely relieved by dilating methods, carried out through the operative cystoscope, in successive sittings, and without complaint on the part of the patient, who was a very nervous woman. Some of the difficulties and disappointments liable to be met with in this work were alluded to and suggestions given for avoiding the most important of them.

Perineal Prostatectomy.—Dr. Joseph Rilus Eastman, of Indianapolis, Ind., said that if all prostatectomies were made as soon as the symptoms of residual urine made its appearance, the mortality would be practically *nil*. As soon as practitioners and surgeons generally realized that prostatic hypertrophy was easily curable by early operation, prostatectomy would receive the recognition which it deserved. Too often the reason for the application of the Bottini method, perineal cauterization, or other palliative procedure was that a case had been permitted to drag along with the catheter until advanced age, general sclerosis or kidney complications forbidding prostatectomy. The conservative operation of Hugh Young should be one of choice, if applicable. It consisted, as was now generally known, in making a sagittal incision closely parallel to the median raphé, through each lateral lobe, and shelling out one lateral lobe at a time, preserving the median bridge containing the ducts. After the removal of the lateral lobes, the third lobe was depressed into a lateral defect and likewise shelled out. After enucleation, Young united the separated margins of the levator ani to the end, that the gauze packing might not press upon the rectum and favor fistula formation. Clinically, the perineal operation had been proven to be the safest. In a large majority of cases prostatectomy might be completed through a perineal incision. If, however, the perineum having been opened, it was discovered that the perineal distance was so great or the median intravesical growth so large as to make the suprapubic operation necessary, such a suprapubic opening might, except in exceptional cases, be made at the same sitting. The perineal was the least bloody route, since it admitted of a complete exposure of the prostate, thereby making it easier to shell out the prostate in the essential line of cleavage. After perineal prostatectomy, the bladder *bas fond* was provided with low, level drainage instead of the up-hill or siphon drainage of the suprapubic operation. It would certainly be conceded that the danger of wounding the ejaculatory duct in any conservative operation would be lessened if the perineal operation be chosen.

Pathological Changes Resulting from Prostatic Enlargement.—Dr. Charles E. Barnett, of Fort Wayne, Ind., said there was still plenty of room in the field of research for the etiological factors in prostatic enlargement. Perverted orchidism and inflammation seemed to be the most logical causes. The former produced hyperplasia on account of a lack of orchoprostatic equilibrium. Inflammation started true adenomyoma, either or both, by stimulating the embryological matrix, on account of the infected acini, and there was a pathological evolution tumor metamorphosis from a fibro-myo-adenoma to an adeno-myo-fibroma. The pelvic fascia was responsible for all future pathology after enlargement began, on account of its ability to accommodate itself to the displacements that occurred. Anatomical study of this fascia was especially hard for the student, on account of the multiplication of synonyms found in text-books. The distorted neck of the bladder started pathology which, in its progression, finally reached the kidneys, and if it was not stopped by operative procedure upon the prostate, it would destroy them. The cases reported exemplified the vast amount of destruction done the whole genito-urinary tract from the prostatic urethra backward, and showed the fallacy of operating on patients at that stage of pathology. A plea was made for the general practitioner to discover prostatic cases early, so that the surgeon could operate on them without danger.

Dr. G. Frank Lydston, in the discussion, thought the profesion at large had accepted perineal prostatectomy as the operation of election, although there were certain cases that should not be dealt with by this route. It was the most direct route, where it was practicable to adopt it. In many instances it was imperative to treat patients palliatively until one was positive that the tumor was not only increasing in size, but was causing urinary obstruction. He pointed out the dangerous phases of prostatectomy. When the operation was done in a careful manner there was no injury to the ejaculatory ducts. There were numerous cases where sexual function had not been impaired.

Dr. F. F. Lawrence said that if surgeons could convince the general profession that hypertrophy of the prostate was a surgical disease, the mortality now attending prostatectomy would immediately decrease as it had done from operations on cases of appendicitis, ovariotomy, and other surgical affections.

Dr. H. O. Walker had operated by the suprapubic route over twenty times, and had lost one patient. At the same time, he preferred, wherever practicable, to do perineal prostatectomy. He removed a prostate suprapubically that weighed seven and a half ounces.

Plastic Surgery of the Urethra.—Dr. G. Frank Lydston, of Chicago, read an interesting and valuable paper on this subject, in which he described the methods he had found most satisfactory in his own cases.

Therapeutic Value of Radium.—Dr. Myron Metzenbaum, Cleveland, Ohio, narrated his personal observations in the clinical uses of radium. He discussed the physiological action of radium of low activities contained in hermetically sealed tubes when placed on ulcerated areas and on the unbroken skin for thirty-five minutes; also the pathological condition resulting from placing radium of high activity contained in hermetically sealed tubes on the unbroken skin for long periods of time. The therapeutic results obtained by using tubes of radium of low activity and coarse were as good in the treatment of lupus, rodent ulcer and small epithelioma as those from the use of radium of high activity and great expense. The author reported and showed photographs of three cases of lupus, and one each of rodent ulcer and epithelioma that had apparently healed by the aid of radium rays. Photographs made by the X-ray and by radium were exhibited, showing that the latter had comparatively little value in the skiagraphy of bone as compared with the X-ray. He pointed out the results obtained by suspending hermetically sealed tubes in various solutions, showing that the same had not been rendered radioactive, and therefore that hey had no special therapeutic value.

Two Cases of Pancreatic Cyst.—Dr. Van Buren Knott, of Sioux City, Iowa, pointed out the physical signs of these cysts and the difficulties which sometimes attended their diagnosis. He showed how the surgeon might be misled by the symptoms. He discussed the method of treatment, made a comparison between incision and drainage and excision, and reported two cases which presented widely different symptoms, physical signs, and morbid influence, treated by different methods. Comparison of these two cases of cysts of the pancreas had been extremely interesting to him, and revealed many striking differences. The more important of these he briefly mentioned as (1) the difference in location and anatomical relations of the tumor. (2) Neither cyst occupied the usual position for such tumors, *i.e.*, somewhat to the left of the median line. (3) Neither was a so-called false cyst of the pancreas, which had a localized collection of fluid in the lesser peritoneal cavity, but each involved the tisues of the pancreas alone. (4) The appearance in the first case of symptoms of disturbed function long before evidence of cyst formation could be detected, while such symptoms remained entirely absent in the second case, even after the tumor had attained great size. (5) The even spherical form of the pancreatic distention in one case, and the peculiar sausage-like tumor in the other, gradually expanding into a spherical termination. (6) The fact that the patient who had much the less complete operation, *i.e.*, incision and drainage, had a much smoother and more rapid recovery than the one in whom the tumor had been almost completely removed. (7) The involvement of the stomach in the first case renderd possible the wounding of its walls during the puncture of the cyst, as the true nature of the stretched, flattened and congested viscus was recognized with some difficulty. In the second case no such accident was possible. (8) The accumulation in the walls of the first cyst of a peculiar sticky, grayish, ash-like deposit, while the lining membrane of the second tumor was clean and smooth. (9) In neither case was the sallow dry skin, said to be characteristic of cysts of the pancreas, present.

Tenotomy of the Tendo-Achilles in Partial Amputations of the Foot; also in Oblique, Compound and Comminuted Fractures of the Tibia and Fibula.—Dr. J. P. Webster, Chicago, read a paper on this subject in which he drew the following conclusions: (1) It is a well-established clinical fact that after tenotomy of the tendo-Achilles (when the foot is kept at rest) the process of repair takes place and satisfactory functional use of the foot is the result. (2) It is much easier to maintain the foot in the exaggerated flexed position after the tenotomy of the tendo-Achilles than with any form of splint, anterior or posterior, metallic or plaster. (3) There is much less pain, as the foot and ankle joints are placed at absolute rest. (4) When the patient commences to walk, none of the resistance of the contracted heel cord is present, so that there is but a slight limp. (5) In oblique and comminuted fractures of the fibia there is much less danger of overriding of the fragments of bone, after a tenotomy. This greatly simplifies the care of the leg and helps to prevent deformity.

(To be Continued.)

BOOK REVIEW.

A Short Treatise on Antityphoid Inoculation. By A. E. Wright, M.D., Late Professor of Pathology, Army Medical School, Nutley; Pathologist to St. Mary's Hospital, Paddington, St. Archibald Constable & Co., Ld., Westminster.

This book consists of a series of papers, with amplifications, already published in *The Practitioner*. It represents an endeavor to forgive a "brief exposition of the scientific principles involved in antityphoid inoculation, and a summary of the practical results already achieved. Being the work of a scientist thouroughly imbued with the principles of the new German school of Ehrlich and his followers, and at the same time, conversant with the practical side of the problem, it is a timely and welcome contribution. Both of these aspects of the question, the theoretical and the practical are presented in an interesting and scholarly manner. The book is based on work in connection with antityphoid inoculation in the British Army, which included, in addition to laborious experimentation, the inoculation of 4,000 soldiers all over India, and the supply of some 40,000 doses of antityphoid vaccine during the South African war.

BOOKS RECEIVED.

Annual Report of the Department of Health of the City of New York. 1902. Illustrated.

Clinical Urinology. By Dr. Alfred C. Croftan. 8vo, 298 pages. Illustrated. Wm. Wood & Co., New York.

Progressive Medicine. Volume III. 1904. 8vo, 284 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

Diseases of the Stomach and Intestines. By Dr. Boardman Reed. 8vo, 1021 pages. Illustrated. E. B. Treat & Co., New York.

Text-Book of Human Physiology. By Dr. Albert P. Brubaker. 8vo, 699 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

Simon's Physiological Chemistry. By Dr. Chas. E. Simon. Second Edition. 8vo, 500 pages. Lea Brothers & Company, Philadelphia and New York.

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ORIGINAL ARTICLES.

SUBDIVISIONS OF THE CONCRETE CONCEPT AREA OF THE HUMAN CEREBRUM.*

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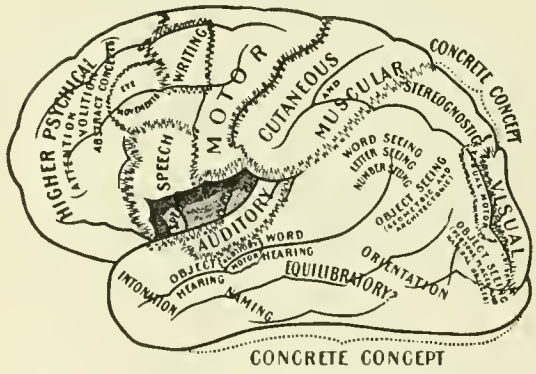
IN a previous paper[1] I have suggested that the term "concrete concept area" should be applied to the parietotempero-occipital region which lies between the projection areas of the cortex and largely corresponds to the great posterior association area of Flechsig. In another contribution[2] I have indicated my views as to the subdivisions of this area, which I first made to include the muscular sense, stereognostic perception, word seeing, letter seeing, number seeing, object seeing, orientation, naming, object hearing, word hearing and intonation. It is doubtful whether the muscular sense should be included in this area, and on further consideration I have decided to relegate it to the primordial regions. It belongs either here or in a position of its own between cutaneous sensibility and stereognostic perception. In the present paper I shall confine myself chiefly to a consideration of several of the sub-areas of the great concrete concept region, namely, those for object seeing and intonation, with some discussion of the cortical representation of color recognition.

Under such designations as mind blindness, soul blindness, object blindness and visual pragmetagnosia (Wyllie[3]) is described a condition in which the individual, because of a cerebral lesion or disease, is unable to recognize by sight once familiar objects. Old visual memories of the kind required for recognition of particular objects are no longer recalled. I shall not enter into any discussion of the refinements of this interesting subject, as this is foreign to my present purpose. In a note to my recent article in the *University of Pennsylvania Medical Bulletin*, May, 1904, on the physiologic areas and centers of the cerebral cortex of man, I indicated my belief that the cerebral area for object seeing was a large one and probably subdivided, especially in highly civilized man, into several subareas or centers of representation such as those for geometric and architectonic forms and for persons, places and natural objects (Fig. 1). Very few cases of object blindness with necropsy have been recorded.

In order that object blindness shall be complete and permanent, the recorded cases would seem to show that it is necessary for lesions to be present in somewhat corresponding locations in both hemicerebrums. Transient or recurring object blindness is, however, sometimes exhibited by patients with a lesion confined to one hemisphere. In twenty-five cases of otitic abscess involving the left temporal lobe, compiled by Merkens,[4] such mind blindness was present. Two cases of transient or recurring mind blindness have recently fallen under my observation. In both of these cases operation was performed for the removal of a brain lesion, presumed to be a tumor, although in one case at least the result did not confirm this opinion. In this case the patient presented in the right half of the body disorders of sensation, stereognosis and coordination. He was partially word deaf, word blind and letter blind, and late in the case showed marked hemiparesis. The operation was performed with the view of exposing the brain at the posterior extremity of the first temporal convolution. A large patch of necrotic tissue, having somewhat the shape of a pyramid with its base toward the occipital pole of the brain, was uncovered. The lesion may have extended further than was revealed by the operation. It not improbably included the caudal extremities of the first and second temporal convolutions, and possibly more.

Fig. 1.



Areas and centers of the lateral aspect of the human hemicerebrum, showing especially the subdivisions of the concrete concept area.

The operation was performed four years prior to the writing of this paper, and the patient is still living and in fair health, but is hemiplegic, partially hemianesthetic and asphasic. He suffers at times from curious attacks which can properly be described as periods of mind blindness or object blindness. The day before reading this paper I re-examined this patient. I found that his hemiplegic condition had gradually become worse, the paralysis having visibly increased, especially during the last year. He showed some slight improvement in the ability

*Read before the Philadelphia County Medical Society, May 25, 1904.

to name objects looked at, also in being able to say many words. He could not, however, form phrases or sentences. He seems still to be partially word deaf, being thrown into confusion in trying to understand much that was said to him. He continued largely word blind, but recognized an occasional word, writing being understood rather better than printed matter.

His wife who accompanied him stated that beginning about two months after the operation the patient had at irregular intervals spells of temporary mind blindness or object blindness. In these, which would last from a few minutes to one or two hours, while he would seem to know his wife, he was apparently unable to recognize others. In these attacks also he appeared unable to recognize objects or his surroundings; he seemed dazed, would look around as if wondering who the persons and what the objects around him were, repeating almost constantly one word, "What, what." He could not understand anything that was said to him at the time of these spells, and became greatly confused and irritated. His wife said that he remembered these spells after they passed off, and would say "Awful, awful," as if in great dread of them. Examination showed that he understood the use of most objects, such as the telephone, a pen, ink, shears, and paper. An effort was made to examine him for color blindness; he could not recognize red and blue, but seemed to know green and yellow; but when the examination was continued he became confused and was unable to recognize any colors.

In the second case referred to, in which operation exposing the occipital lobe was performed, and portions of the cortex removed or contused corresponding to parts of the first and second occipital convolutions, the man suffered not only from optic aphasia, but temporarily from object blindness. At first he did not at times fully recognize persons and things. The impairment was only partial.

Liepmann has recently reported a practically uncomplicated case, of mind blindness. It was first recorded clinically in 1902.[5] The patient, a music teacher, aged fifty years, had an apoplectic attack September, 1901. After this he did everything in a reverse or foolish manner, as for instance, washing in his soup. He did not recognize large objects, nor his own reflection in the mirror, but recognized persons by the voice. He did not know his own wife by sight; color perception was much disturbed. A small defect was present in the upper right quadrant of the visual field; vision was two-thirds. He could imitate large movements fairly well. Well-known objects were often wrongly named. Recognition through touch was slightly disturbed, but through hearing was normal. Motor aphasia was absent, as was also sensory aphasia, unless his wrongly naming objects might be so considered.

The patient died in 1904, two years after the case was first recorded by Liepmann. A necropsy showed most interesting results. Lesions were found on both sides of the brain, on the left in the lower occipital convolutions and on the right in the angular and second occipital convolutions.[6] at the base of the left occipital lobe was a deep cavity which indicated an area of softening, involving the fusiform and lingual convolutions. In the right hemicerebrum the area of softening was on the convexity and extended from the angular gyre through the gray and white matter of the second occipital gyre.

A case reported by Sereiux[7] is of value, notwithstanding the complication of object blindness with other symptoms like word blindness. This case, which was published in 1891, is cited by Wyllie. The patient was a woman sixty-two years old, who in 1888 had a temporary paralytic attack with lasting visual disturbances, and in 1890 had a second seizure with epileptiform spasms, hallucinations of hearing, and delirium. When examined six months later she was word blind, agraphic, word deaf, and paraphasic. She also showed marked mind blindness, with intact general intelligence. She was unable to recognize her nearest relations, said that the people around her seemed to be wearing masks, and that her daughter's face appeared as "flat as a skate." The object blindness was most marked with regard to faces, although exhibited in less degree with reference to other things. She could recognize some objects but not others; a comb, for instance, was mistaken for a pen-holder. She died of pneumonia a few months after observations of Sereiux were made. At the autopsy lesions were found in both hemispheres. In the left hemisphere were present patches of softening and in the supramarginal (subparietal) gyre, and in the caudal extremity of the first temporal gyre; on the right were large areas of softening involving the angular and supramarginal gyres, and also the caudal extremities of the first and second temporal.

So far as is known to the writer, the few other cases of mind blindness which are recorded are not of equal value with those of Liepmann and of Sereiux, but all point to the existence of centers for object recognition by sight in the tempero-occipital convolution from the second to the fourth or fifth.[8]

Studies of the brains of men noted for their powers of observation in special directions, as for instance, distinguished artists, architects, engineers, astronomers, and explorers, also of the brains of those known to have had unusual capacity in mechanical pursuits or in those callings which demand quick powers of recognition of persons and places, may eventually afford some facts of value with regard to the development of the brain in the regions in which object recognition has been localized by the above pathological findings. A comparison of such investigations with the results of the examinations of different and lower types of

brain will make these observations of especial value. E. A. Spitzka's study of the brain of Major J. W. Powell is of great importance in this direction, not only for what it teaches, but also for what it suggests as possible to future investigators. The brain of Major Powell was highly developed in the concrete concept region, and it was even possible to indicate special subareas of high development in particular portions of this region.

Spitzka in his contribution on the brain of Major Powell gives briefly the objects and history of similar examinations of the brains of notable persons.[9] The value to science of such investigations depends upon the principle that elaboration of brain structure is proportionate to the degree of intelligence. The reader interested in the subject is referred to Dr. Spitzka's paper for a most interesting historical résumé of the work done from the time of Rudolph Wagner (1860). Spitzka confines himself in his review to the question of brainweight and surface morphology of the cerebrum.

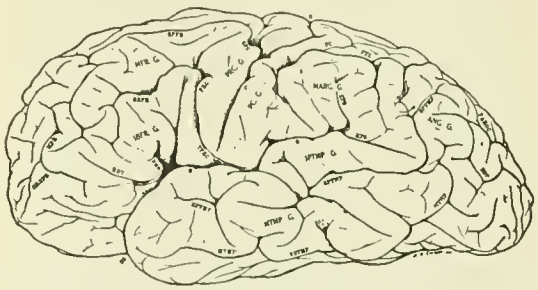
The underlying principle in the efforts to correlate the anatomy and morphology of the cerebral surface with grades of intelligence and capacity is to be found in the statement made by Spitzka that "the cortical expanse of any given area increases with the rise in functional dignity of that area." The supremacy of man over the anthropoids is expressed in the greater size and complexity of the brain of the former. Spitzka emphasizes the fact that the peculiarity of the human brain is to be found in the unusual development of the association areas and tracts—of the parietotempero-occipital concrete concept area and the prefrontal higher psychical region; he roughly estimates these areas as constituting two-thirds of the human cerebral cortex. The studies of the brains of men notable for their intellectual attainments, from Wagner's investigation of the brain of Gauss, the mathematician, in 1860, down to the recent examinations of the brains of the Seguins and of Powell by Spitzka, all indicate greater elaboration of these areas, and the finer recent work shows unusual development of particular subdivisions of these areas.

In general terms, as has already been intimated, unusual elaboration and complexity of fissures and gyres, especially in the intermediate and higher psychical areas, are the expression of unusual or at least highly specialized mentality; but this is a rule not without exception, as is illustrate by Wilder's[10] study of the brain of Chauncey Wright, with its simple fissures, broad gyres and bridged central fissures. In some higher type brains it may be that a large cortical field is obtained by broad convolutions and deep fissures and sulci rather than by the development of secondary fissures and gyres, and that in such brains the cortical layers are relatively richer in cellular elements than is the case in the more elaborated brain.

Spitzka in his paper on the brain of Powell discusses the relation of certain cortical areas to the doctrine of cerebral localization from the standpoint of the morphological and anatomical study of the cerebral surface, in particular directing attention to the correlations between special cerebral areas and the faculty of speech.

The present paper is concerned especially with the presentation of the broad features of the subdivisional localization of the concrete concept region. A large part is devoted to the demonstration of the existence of these subareas by the recital of clinicopathological cases, but in order to emphasize the importance of gyral and fissural studies, in adding to our knowledge of psychic localization, I shall presently briefly compare a few of the observations of Spitzka with some observations made and published by the writer about eighteen years ago. My studies were made on the brains of criminals, paranoiacs, idiots, and negroes, and in a single instance, jointly with the late Dr. A. J. Parker, on the brain of a Chinaman. Both before and since the publication of the papers containing these observations, I made many examinations of human brains of average and of low type, with results which have confirmed me in the views expressed in these publications as to the value, when our methods are more perfected, of such studies in adding to our knowledge of cerebral function and of many cerebral disorders, particularly those which indicate arrested or irregular psychical development. The correct method of applying morphological and anatomical studies of the human brain to cerebral localization is by a comparison of brains of the low, high, and average type with each other, and these with the brains of animals lower in the scale than man, and especially with those of the anthropoids.

Fig. 2.

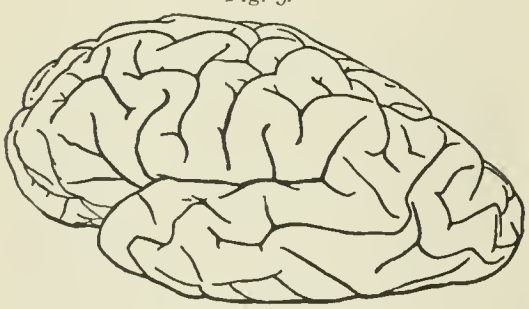


Lateral view of left hemicerebrum of J. W. Powell. This half is slightly flattened on the dorsum. One-half natural size. (E. A. Spitzka).

In Fig. 2 is presented, by permission of Dr. Spitzka, a lateral view of the left hemicerebrum of the brain of Major Powell. Both cerebral hemispheres presented a high general development, and some unusual local peculiarities; for the purposes of this paper it is best to recapitulate these in the language of Dr. Spitzka. In Major Powell's brain the most notable fea-

tures are: (*a*) "The weight of the brain, 1,488 grams, which, for a man of small frame aged sixty-eight and a half years is well above the average; (*b*) a superior degree of fissural complexity and flexuosity of the gyres not affected by the atrophy accompanying old age; (*c*) a superior degree of differentiation of the left subfrontal gyre, (*i.e.,* emissary speech center) as compared with that of the right; (*d*) the left insula (*i.e.,* associative center for the speech faculty) exhibits a slightly superior differentiation; the pre-insular pole is much more prominent than on the right, and the total size is somewhat greater; (*e*) great redundancy of the subparietal regions (*i.e.,* marginal, angular, and postparietal gyres on the right side, encroaching considerably upon the Sylvian cleft; (*f*) preponderance of right frontal lobe (mesal surface) over the left, and a proportionate reduction of the right cuneus-precuneus as compared with the left; (*g*) the precentral gyres are much wider and more massive than the postcentral; (*h*) the supertemporal fissures are interrupted at about the same site on both sides; (*i*) the epiphysis (pineal body) is unusually large." (Spitzka.)

Fig. 3.



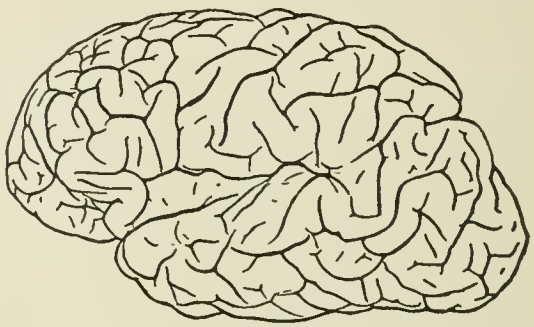
Brain of a Papuan (drawn by E. A. Spitzka from a specimen in the Anatomical Museum, Columbia University).

It will be seen that both the concrete area, including the cerebral zone of speech, and the higher physical regions of the prefrontal lobe, were especially developed. Unusual extent and elaboration of fissures and convolutions were particularly marked in some portions of the parietotempero-occipital association region, and Spitzka correlates these with well-known mental characteristics of the man as determined by opinions obtained from those who knew him best and were best fitted to judge. "The power which chiefly characterized Powell's intellectual ability was" (as would be inferred from his highly developed concrete concept region), "that of seeing analogies and making comparisons, of coupling observations and thoughts which to most people seemed not at all related to each other until by him placed in a certain light. With him the conception of the concrete outweighed thought in the purely abstract (the function, chiefly, of the frontal association areas)." (Spitzka).

A comparison of the illustration showing the left lateral aspect of Powell's brain with that of Papuan (Fig. 3) shows at a glance the extraordinary difference both in size and elaboration of the intermediate and higher psychical regions in the two specimens.[11] The brain of Helmholtz, the great physicist (Fig. 4) shows unusual elaboration both of the prefrontal and the posterior association regions.

In Figs. 5, 6 and 7 are shown photographs of three aspects of the brain of Alexander Winchell,

Fig. 4.

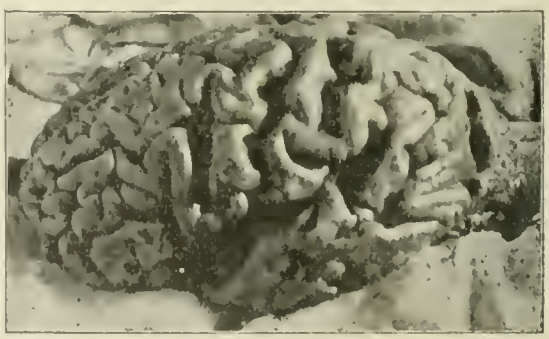


Brain of Helmholtz (after Hansemann). (E. A. Spitzka.)

LL.D., the distinguished geologist, educator and scientific author. For the opportunity of reproducing these photographs I am indebted to Wm. J. Herdman, Ph.B., M.D., Professor of Diseases of the Mind and Nervous System in the University of Michigan.

Studying and comparing the views of the lateral aspects of the left and right hemicerebrums, shown in Figs. 5 and 6, fissural and gyral

Fig. 5.



Lateral aspect of the left hemicerebrum of Professor Winchell.

complexity on both sides is evident, secondary gyres and fissures abounding. The first, second, and third frontal gyres on the right, although considerably convoluted, are well demarcated. This is not altogether the case on the left. The central fissure and the precentral and postcentral fissures and convolutions of both hemispheres are relatively simple, both the fissures and gyres are deep and wide, and the convolutions massive. The left central fissure is long and

deep, and apparently not quite confluent with the Sylvian.

Blurring of the photograph of the left hemisphere in the parietotemporal region interferes with the study of it, but some complexity is evident, especially in the supramarginal and angular region. A real study of the characteristics and peculiarities of the brain surface cannot be made from photographs, however good, and I have indicated only a few of the many interesting features which seem to be presented by the lateral and occipitoparietal aspects of the brain of Professor Winchell, which is evidently worthy of elaborte study such as has been given by Spitzka to the brain of Powell, of the Seguins, and of others.

In the illustration Fig. 7 is shown an occipital or occipitoparietal view of both hemispheres. It is of value, showing as it does at a glance, the unusual difference in the fissural and gyral arrangement and elaboration between the two hemispheres in this region. On the right the parieto-occipital region is extremely and very peculiarly

Fig. 6.

Lateral aspect of the right hemicerebrum of Professor Winchell.

convoluted. The demarcation of the typical convolutions on the left is more readily made out, the fissures and gyres here, while not of simple type, having apparently less deviations. This occipital view impresses one with the idea that the two hemispheres could hardly have belonged to the same individual.

Dr. Herdman in the letter which accompanied the photographs, says of Professor Winchell that his linguistic power was somewhat unusual; he was a good Greek, Latin and Hebrew scholar, and spoke German and French fluently; also that he was a man who was very methodical in his acquisitions, and one who could readily avail himself of the knowledge that he had acquired as occasion demanded.[12]

From his boyhood Professor Winchell was a close student, both of nature and of books; he was skilful in the use of his eyes and hands, being a good offhand draughtsman and manipulator of geological tools and scientific instruments; he was a prolific writer, particularly on geological subjects, his writings showing him to be not only an excellent observer and investigator, but also one possessed of a scientific imagination and reasoning powers of a high order.

In the *Journal of Nervous and Mental Disease* for September-October, 1886, and in *The Philadelphia Polyclinic* for September, 1886, the writer described the peculiarities of the fissural and gyral development in the brains of several criminal paranoiacs, giving photographic illustrations of different aspects of the brains in these cases. A valuable lesson is to be learned by comparing these illustrations with the projection drawings of Spitzka in the left hemispheres of the brain of Major Powell and of the Papuan, and with Hansemann's illustration showing the same side of the brain of Helmholtz. Striking differences are readily made out between the anterior and posterior association areas of the high and the low type brains respectively. Writing in 1886, I summarized as follows the most important indications of inferior development shown in one of the brains described as the comparatively simple type

Fig. 7.

Occipitoparietal view of the brain of Professor Winchell.

of the frontal lobes, the partial exposure of the insula, the confluence of the right central with the Sylvian fissure; the confluence, almost complete, of the right and less perfect on the left of the calcarine with the hippocampal fissures, the ape-like similarities shown by the annectant gyres on both sides, the shallowness, shortness and complete bridging of the right calcarine fissure, the imperfect angular gyre of one side, and the simplicity of the tempero-occipital and parieto-occipital regions.

Writing years before the observations of Flechsig, of Wilder and of Spitzka were published, it is interesting to note what is said about the simplicity and the aberrancy of the tempero-occipital and parieto-occipital regions in another low type brain. Many ape-like peculiarities were shown in the gyres and fissures generally, these being especially marked in the parietotempero-occipital region. The markings of the frontal lobes of both hemispheres in this

brain were simple; the intraparietal fissure was unusually long and only partially bridged; the supramarginal (subparietal) gyre was small; the superior and inferior annectant gyres were somewhat aberrant. Wernicke's fissure (the homologue of the external perpendicular fissure of the ape) was clearly outlined, communicating with the supertemporal fissure, and other interesting peculiarities indicating low psychical development were present.

Some of the conclusions reached in the papers above cited, both from a general study of the subject and the investigation of the low type brains, with regard to the peculiarities which probably indicate a low or aberrant order of human brain, are of interest in connection with our localization studies of the high and intermediate psychical areas, and also have especial interest by contrast in reviewing the work done by Spitzka and others on the brains of those high in the intellectual scale. The subject is fairly well covered in the following citation: "In general, simplicity of structure, with well-defined and comparatively little-complicated fissures and gyres, point to a low type; simplicity of the frontal fissures and gyres in particular indicates an inferior order of brain. Unusual symmetry and atypical asymmetry are indicative of a low type. Normal human brains present atypical asymmetry."

Coming to special details, Benedikt refers to a fissure, which he terms the external orbital, very constant in apes, and not commonly distinct in the human brain, but rarely absent in criminals' brains examined by him. Partial or complete uncovering of the insula, that is, its exposure to sight without pulling apart the margins of the Sylvian fissure, is to be expected in white brains of inferior grade. The Sylvian fissure in the average brain is of moderate length; the higher the type, other things being equal, the more likely it is to be short. The central fissure in inferior types will be less sinuous, and less likely to be fully separated above from the sagittal or longitudinal fissure and below from the Sylvian. In poorly developed hemispheres the gyres bounding the central fissure will not be sinuous and complicated—that is, will present little elaboration. An unusually well-defined, elongated, or unbridged parietal fissure; a small marginal gyre, as when the parietal fissure approaches closely to the Sylvian; a much elongated so-called retrocentral (postcentral of Wilder) fissure; and an occipital fissure which opens well out on the lateral surface, with the superior *pli de passage* below the brain level, are probably indications of inferiority.

Shortness of the Sylvian fissure, in more highly evolved brains, tends to confer a corresponding shortness in the temporal lobe; the opposite is seen in brains but little evolved. Other peculiar conditions of the temporal lobe seem to be indicative of low type; as great length, particularly of the posterior vertical arm of the supertemporal or parallel fissure, with a tendency to confluence with the Sylvian, occipital, or parietal fissure. Such a tendency indicates a lack of development of Gratiolet's transition gyres of the tempero-occipital and parieto-occipital regions. On the median surface of the hemisphere, some indications of inferiority are smallness of the paracentral lobule and precuneus, confluence complete or incomplete of the calcarine and hippocampal fissure, and unusual definition of the median portion of the occipital fissure, although curiously, in a few brains of low type an unusual development of the so-called gyre of the cuneus, or inferior internal *pli de passage*, is observed. This is an aberrant or peculiar condition, certainly not usual in the average human brain."

The question of the existence of separate cerebral centers for color, luminosity and form is one which deserves consideration in connection with the particular subject of the present paper. If special centers for color exist, they are probably just within or just outside of the primary visual areas for light, in other words, within or on the borders of the cuneus and the first occipital convolution. A few facts of physiology and of clinical medicine seem clearly to indicate the existence of such centers. A few cases of unilateral congenital color blindness have been put on record. In some of these red and green have been confused as in the more usual cases of bilateral color blindness. In other instances the unilateral color blindness has been total. The unilaterality of the symptom is in itself suggestive of the special localization for color representation.

Occasionally color blindness is associated with hemianopsia, or with quadrant or sector defect, in other cases, more interesting in connection with the subject of color representation, hemiachromatopsia is present without hemianopsia.

Two of the most interesting cases of achromatic defect with lesions of the brain demonstrated by necropsy are those of Brill and of Verrey. As the case of Brill, although reported twenty-two years since, has received little or no attention from writers on the subject, and as it is a case of unusual interest, I shall refer to it in some detail.

The patient, a man sixty-three years old in October, 1881, had an apoplectic attack resulting in right hemiparesis, right hemianesthesia, incontinence of urine, and increased right knee-jerk. After several weeks these symptoms were changed and supplemented; the anesthesia of the thigh became hypesthesia, tremor of the paralyzed side developed, and the patient suffered from headache, restlessness and insomnia, with occasional spells of tinnitus aurium and dazing, and also dulness of mind. His sight became dull and hazy. Four months after the attack the patient was examined by Dr. Brill and Dr. E. C. Spitzka in consultation. He failed to recognize green; he was doubtful as to whether violet was greenish or bluish; green he said was red or

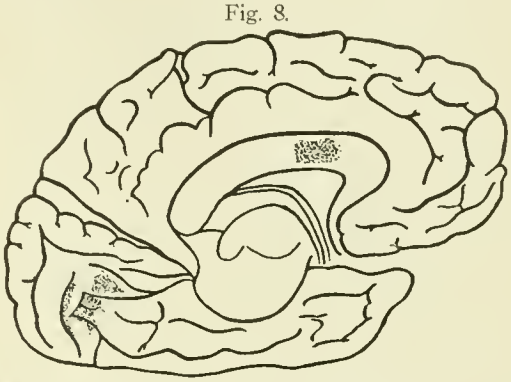
rather pinkish; he could always recognize red and yellow. The color loss involved both eyes. Gross objective vision was retained except a subjective blurring; the fields of vision were not limited. The patient was illiterate so that his condition as to letter and word blindness could not be determined. He had worked on the railroad for thirty years before his illness, and was able to recognize all colors.

He died about 6½ months after admission to the hospital. At the necropsy a softened area was found at the apex of the left cuneus and the adjoining upper part of the lingual convolution. Brill exactly describes the area of softening as follows: "The focus was triangular, the apex being directed forward and the short side posteriorly. It extended to within a centimeter and a half of the apex of the occipital lobe, and involved half the altitude of the cuneus in the middle of the latter, and almost the entire apex of this lobe. The gyrus lingualis was involved for about one-quarter of its width on the surface, and evenly from the posterior almost to the anterior extent of the lesion described. The calcarine fissure could not be identified excepting its most anterior extremity, and even at this spot both borders were softened.[13] At its lowest border the softening reached almost to the posterior cornu. Brill cites chiefly from Exner's work[14] on cerebral localization, cases of Exner, Vaultier, Fürstner, Reinhard, Quaglino, Boys de Lory and Förster.

Verrey reported sixteen years ago the most interesting case of hemiachromatopsia with necropsy, showing the lesion to which the loss of the chromatic sense was due, which has yet been put on record.[15] The patient was a woman sixty years old, whose symptoms were difficulty in reading, with good general visual acuity, slight concentric contraction of the field, complete absolute right hemiachromatopsia, and a sensible diminution of visual acuity for the right half of the visual field. The patient had paroxysmal headache and attacks of vertigo with vomiting. She gradually developed fatigue in reading, with letter dancing and dyslexia. Examination showed that with her central field she could read letters and words written in different colors. Twenty days before her death the patient's symptoms were much the same as above summarized, with the exception of a further enfeeblement of luminous perception. Eight days before her death she fell, and at this time developed a complete left hemiplegia, entire cutaneous irresponse, violent vomiting and clonic and tonic convulsions of the face and right side. The necropsy showed recent large hemorrhage in the right hemisphere destroying the centrum ovale and the basal ganglia, and filling the right lateral ventricle. A fresh hemorrhage the size of a bean was situated at about the junction of the anterior and middle third of the left callosum. A second lesion was found between the floor of the posterior horn of the left lateral ventricle and the basal surface of the occipital lobe. Close examination showed a large thrombosed vessel, and that the parts destroyed were the white substance of the third occipital convolution, more or less completely the white substance of the occipital extremities of the lingual and fusiform convolutions, and the posterior inferior point of the cuneus (Fig. 8).

According to Verrey, up to the time of the publication of his paper, eight cases of hemiachromatopsia had been reported. Some of these were associated with verbal blindness, alexia, dyslexia, or other visual disturbances of language, but in some the hemiachromatopsia was not thus accompanied, and Verrey therefore concludes that hemiachromatopsia of cerebral origin, having its seat in the left hemisphere, may exist without being accompanied by verbal blindness. The same has been proved by others to be true of hemianopsia. The cases both of Brill and of Verrey prove that a center for color recognition, and for the chromatic sense is on the

Fig. 8.



Mesal aspect of the left hemicerebrum showing the cortical extent of a lesion causing hemiachromatopsia, in a case recorded by Verrey; the subcortical radiations of the lesion are described in the text. A small lesion of the callosum is also shown.

mesotentorial surface of the hemicerebrum, probably in the fusiform and lingual convolutions. Not improbably also in part the sense is located in the adjoining portion of the cuneus. In Brill's case it would seem from the report that the condition was not a hemiachromatopsia, but one of bilateral partial color blindness, although unfortunately the writer is not sufficiently explicit with regard to this point.

The chromatic half retinal representation would be most likely to be situated on the mesotentorial surface of the hemisphere. Verrey makes the valuable suggestion, which was partially demonstrated by the study of his case, that somewhat higher on the mesal surface of the occipital lobe than the area for the chromatic sense, is located in successive order the representation of form and of luminosity.

It is highly probable that just as we have a lower or primary visual cortical area in the cuneus and first occipital gyre, and a more highly evolved area in the angular region, the former representing retinal half fields and the latter the

central or macular region, so color recognition has two distinct cortical areas of centers of representation, one mesotentorial for the chromatic half fields and the other lateral occipital in the neighborhood of the angular gyre for color recognition by the macula.[16]

The cerebral representation of the musical sense, or of what some prefer to call intonation, or even note hearing, is one which has engaged the attention of a few of the best known workers in the field of localization, as well as of others who have turned to the subject because of its esthetic side. For reasons which will presently appear, intonation has an area of cortical representation entirely separated from that for word hearing, although doubtless not far removed from the latter. In the diagrammatic scheme (Fig. 1) it has been placed in the cephalic extremities of the first and second temporal gyres where its location is indicated by anatomical, morphological and clinicopathological investigations.[17] I shall confine myself to a presentation of a few of the most important facts indicating the separate localization of this so-called musical sense.

The localization of a musical center or, speaking more correctly, of a center for the appreciation of the relation of tones, early engaged the attention of Gall and his school. Gall indeed devoted much time and work to the establishment of this localization, the result being that he placed this center over the Sylvian fissure, in the upper and lateral part of the forehead, in the temporal region almost bordering on the supraorbital ridge. As the parts of the brain corresponding to this cranial localization would be in large part the anterior extremity of the temporal lobe, Gall's localization in this case, as in that of speech and of higher reasoning faculties, was probably nearly correct. Others have located the intonation area elsewhere, Flechsig, for instance, in the subparietal region.

A few facts well known to students of cerebral disease, and especially of aphasia, clearly indicate the differentiation of word hearing and the musical sense. Aphasic patients, the aphasia in some cases being almost total, may retain the musical faculty. A number of such cases have been recorded. A few cases with note deafness without word deafness have also been recorded, one by Grant Allen,[18] for instance, the case being that of a young man who was entirely unable to recognize musical notes, and yet had no affection of hearing or speech.

Occasionally the musical defect, evidently due to localized cerebral disease, has reference only to high tones.

In somewhat numerous cases word deafness and note deafness or musical deafness have been associated in the same case, and in a few of these one of the defects has been recovered from while the other remained. In a case recently under the observation of the writer, a man, forty-four years old, after an apoplectic attack, became word deaf, word blind, and paraphasic. During the first four or five weeks after the cerebral seizure causing his aphasia, from the statements of both his wife and daughter, the patient seemed to have entirely lost the power of appreciating tones of music. Although his aphasia was still of a most serious character when seen by me, a little more than three months after his attack, he had largely regained his power of appreciating music. On testing him by having his daughter play on a piano, he was able to hum tunes which had been well known to him, in unison with the instrument, although he could not recall the words of the songs, or even their names. A case like this indicates that while the center for tones is separate from that for words, the two are in the same general region of the cortex, and a destructive lesion involving one probably implicates the other by pressure or temporarily by edema.

As bearing upon the subject of music or tone representation in the cortex, the well-known fact may be recalled here that a considerable number of cases of mental enfeeblement, or even of acknowledged idiocy are able to repeat tunes or appreciate music, although deprived of the faculty of speech. In comparatively rare cases the insane retain the musical faculty after the mind is largely disintegrated and the speech faculty has for the most part disappeared.

One of Spitzka's conclusions regarding the brain of Major Powell is interesting in this connection. "The rather superior, but not extraordinary, development of the area in closest proximity to the auditory field," says this writer, "can safely be correlated with his good appreciation of music, not only of European composition but of Indian as well, as shown in his masterly analysis of Indian songs and melodies. As Dr. McGee has stated, Major Powell was a 'potential musician,' if not a trained one, and this statement is supported collaterally by the fact that his daughter and other blood relations are highly accomplished musicians.[19]

In the few well observed and well recorded cases of amusia in which necropsies have been obtained, the lesions have involved the anterior portion of the temporal lobe, usually the first or the first and second temporal gyres, although sometimes in addition some of the cortical matter hidden within the Sylvian fossa.

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1 Journal American Medical Association, October 4, 1902.
2 Univ. of Penna. Medical Bulletin, V. 17, May, 1904.
3 The Disorders of Speech, Edinb., 1894.
4 Deutsche Zeitschrift f. Chirurgie, V. 60, p. 417, 1900.
5 Allgemeine Zeitschrift f. Psychiatrie, Berlin, V. 59, p. 952, 1902.
6 Allgemeine Zeilschrift f. Psychiatrie, Berlin, V. 61, p. 424, 1904.
7 Compt. Rend. Soc. de Biol., December, 1891.
8 At the recent meeting of the American Ophthalmological Society, held in Atlantic City, July 13 and 14, 1904, Dr. W. A. Holden, of New York, presented a report of a most interesting "Case of Mind Blindness, Unique in That the Entire Mesial Surface of Both Occipital Lobes and Both Optic Radiations Were Preserved." Through the courtesy of Dr. Holden I am able to make brief reference to this case, which will be published in the Transactions of the Ophthalmological Society. This patient, after two apoplectic seizures—the first eight years and the second seventeen months before his death—became emotional, depressed, mentally confused, aphasic, hemiparetic and mind blind. He also developed delusions of marital infidelity, visual hallucinations, and failed in memory, gradually growing weaker physically and mentally until his death. Necrosy showed

that the parietotemporal branch of the medicerebral artery in the Sylvian fossa was occluded on each side. This occlusion caused on the left necrotic softening of the posterior part of the left temporal lobe of the lower and posterior part of the supramarginal (subparietal) gyre, of the whole of the angular gyre and its adjacent parietal borders. A sunken, older-looking lesion was present near the occipital tip. On the right the softening involved the whole of the supramarginal (subparietal) gyre, the upper portions of the angular and postparietal gyres, the lesion reaching back into the occipital lobe just behind the parieto-occipital fissure, nearly to the mesal edge of the hemisphere. The upper half of the postcentral convolution was also damaged. It will be seen that the report of this case, taken in conjunction with Liepmann's case, and other cases, confirms the writer's view of the large parietotempero-occipital area concerned with object seeing in its different forms.

9 Dr. Spitzka's paper was read in part before the Anthropological Society of Washington, and was published in full in the American Anthropologist (N. S., V. 5, No. 4, October-December, 1903). The writer is indebted both to Dr. Spitzka and to the editors and publishers of the Anthropologist for the privilege of using the illustrations, figures 2, 3, 4.

10 Journal of Nervous and Mental Disease, 1896, p. 706.

11 The brain of the Papuan was drawn by Dr. Spitzka from a specimen in the Anatomical Museum, Columbia University, and is used by his permission, as is also the brain of Helmholtz (after Hansemann), shown in Fig. 4. These illustrations, like that of the brain of Major Powell, are taken from Dr. Spitzka's paper, already referred to, in the American Anthropologist.

12 On May 3, 1891, Professor Mark W. Harrington read a memorial address on Professor Winchell before the University of Michigan. This address has been published in pamphlet form, and from it a good idea of the habits, acquirements and mental characteristics of Professor Winchell can be obtained.

13 American Journal of Neurology and Psychiatry, V. 1, N. Y., 1882. Previous to the report of the necropsy, Brill had reported this case clinically in the Chicago Medical Review, April 1882.

14 Untersuchungen über die Localisation der Functionen in der Grosshirnrinde des Menschen, Wien, 1881.

15 Verrey, Arch. d'Ophthal., Par., V. 8, July and August, 1888.

16 For a fuller discussion of this subject in its different bearings the monographs and works of Verrey, Munk, Wilbrand, Swanzy and Norris and Oliver should be consulted. Mackay, at the annual meeting of the Section of Ophthalmology of the British Medical Association, held at Glasgow, August, 1888, presented an interesting contribution specially discussing acquired color blindness and the question of the separate recognition of color, form and light, giving a table of cases up to that date (British Medical Journal, Nov. 10, 1888).

17 In the recent series of papers on cerebral localization by the writer, of which this is one, this subject might have been appropriately considered with that of aphasia and the cerebral zone of speech (American Journal of the Medical Sciences, September, 1904), but for reasons of convenience it is discussed here. It is not, however, out of place in this connection, as the area for the musical sense, like that for other forms of symbolization, may in part at least be considered as belonging to the great concrete sphere of the cortex.

18 Mind, April, 1878.

19 Spitzka, Amer. Anthropologist, N. S., V. 5, October-December, 1903.

REPORT OF A CASE OF SPLENOMEDULLARY LEUCEMIA TREATED FOR NINE MONTHS BY THE X-RAY.[1]

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W. A., whose case is here reported, first came to my office August 4, 1903. His age at that date was twenty-seven years. He is a native of California, has always resided in this state, the past eight years in San Francisco. His family history is excellent, for his father, mother, two brothers and two sisters are all living and well, and no brothers or sisters have died. He was always well previous to his present trouble, except for several attacks of tonsillitis—he recalls three or four such attacks in all. He never had malaria. He came to San Francisco in 1896 to work as a bookkeeper, and continued at that occupation until compelled by his present illness to give it up. The history of this present illness naturally divides itself into two periods and will be so described for the sake of contrast. The first period is that from the time the symptoms were first observed until X-ray treatment was begun; the second period covers the last nine months, during which X-ray treatment has been given.

First Period—April, 1902, to October, 1903.—In April, 1902, the patient first noticed that he was pale, weak and short of breath on walking. He then consulted Dr. J. H. Graves, of this city, who found the spleen enlarged, the blood count and smears characteristic of splenomedullary leucemia, and gave Fowler's solution for a month without effecting any material improvement. The patient was then persuaded by friends to consult a homeopath in this city in June, 1902, who never examined his blood at all, but diagnosed malaria, and treated him for eight weeks for that disease. Growing no better, the patient then gave up his work and returned to his parents' home in Monterey County on September 1, 1902. In September, beginning about the tenth, he had an attack characterized by severe pain in his left side, which kept him in bed for ten days—the first and only pain he has ever had during his illness. He remained at home until December 1, 1902, then returned to San Francisco and went to work again for his old firm, but traveling about "drumming" trade instead of keeping books in the office. This work he continued for three months; but all the while he felt very weak and tired, and his abdomen was steadily enlarging.

The latter part of February, 1903, he once more gave up his work and went to Byron Springs in search of health. There his blood was again examined by Dr. Robert Crees, who once more found the condition to be a splenomedullary leucemia. Remaining in Byron Springs only one week, the patient returned to San Francisco, and to Dr. Graves, who had first diagnosed his case; but after only a brief stay here he went on to his home in the country. There he remained until the following August, taking quinine, arsenic, and iron at intervals for four months; but continuing weak, pale, unable to work, and with abdomen constantly enlarging. On June 30 and July 1, 1903, he had a severe attack of epistaxis, and lost considerable blood, but there was no other unusual incident in his history during the months he remained at home.

When first he came to me, on August 4, 1903, he was very pale, dyspneic and weak. His abdomen was greatly distended, tense, and caused much discomfort; and in addition to the splenic tumor it contained a small amount of ascitic fluid. His digestion was much disturbed and sleep interfered with by the intra-abdominal pressure. There was no pain or tenderness over the long bones. No organic disease could be made out in the lungs or heart, and the urine was normal. Nowhere were there found enlarged lymphatic glands. The liver was not enlarged. The spleen on August 6 reached 12 cm. below the level of the umbilicus, 5 cm. to the right of the median

1 Read before the California Academy of Medicine, June 28, 1904.

line, and its total vertical area of dulness measured 39 cm. Of the first blood examination, made by Dr. Graves in April, 1902, I have not been able to obtain any report. Of the examination made on February 27, 1903, Dr. Crees gave the following report: Reds, 2,560,000; whites, 495,000; hemoglobin 60 per cent. No differential count was made at that date, but Dr. Cree's report states that myelocytes were seen in large numbers and nucleated reds were found. A later count, made by Dr. Crees on March 5, showed 371,000 white corpuscles. A differential count made by Dr. Graves on March 10, 1903, showed the following: Myelocytes 43 per cent; polymorphonuclears 37 per cent.; large lymphocytes 8 per cent; small lymphocytes 7 per cent; eosinophiles 5 per cent; and occasional nucleated reds were noted.

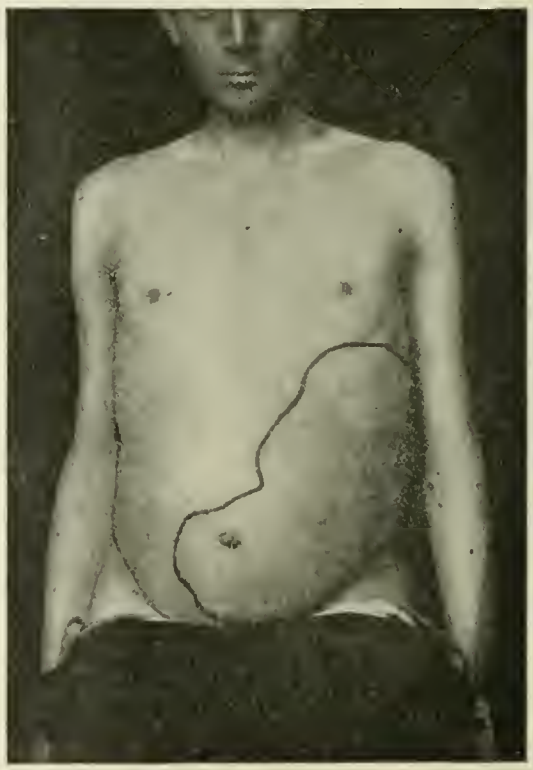
On his second visit to my office, on August 6, the white count was 220,000, but at that date no differential count was made. He was then put upon routine treatment: Fowler's solution in ascending doses, which were well tolerated; but during the month of August, while on this treatment, his condition grew rather worse. On September 2, after one month of arsenic, his blood examination gave the following: Whites, 141,000; reds, 1,620,000; hemoglobin 37 per cent.; myelocytes 45 per cent.; polymorphonuclears 25 per cent.; large lymphocytes 15 per cent.; small lymphocytes 7 per cent.; eosinophiles 8 per cent.; nucleated reds, 40, while counting 295 whites. Because his condition was at least no better and because no definite promise of improvement could be made him, the patient concluded to return to his home in the country, and did so early in September.

Thus, at the end of the first period of the illness, in spite of the employment of all the ordinary and well tried methods of treatment for this ailment, by several different physicians, this man's condition was distinctly worse than at the outset, and the outlook was for a fatal termination of his illness within a few months at most. He was practically sent home to die.

During the month of September, however, my attention was attracted to the article by Senn, published in the *Medical Record* of August 22, 1903, describing a case of splenomedullary leucemia treated by the X-ray with apparently great improvement. This plan of treatment had at least the virtue of novelty and seemed worthy of trial. I therefore wrote to the patient, advising him to return to San Francisco and make the experiment, at the same time explaining the uncertainty that any good would result. He decided to try the X-ray as advised, and returned to San Francisco September 29 for that purpose.

Second Period—October 1, 1903, to July 1, 1904. Condition at Outset of Treatment.—Before treatment with the X-ray was begun, certain data were collected as a basis for determining results: (1) *General condition:* It was recognized that a change in the feelings of the patient must be looked upon as unreliable evidence of improvement, unless accompanied by other more tangible proof; and yet his discomforts were so obvious that any disappearance of them could be noted by the observer, as well as by the patient himself. The marked symptoms of illness were the pallor, weakness, shortness of breath and abdominal distention; about the presence and degree of these there could be no question. They had been present for a year and a half, gradually grown more pronounced, and had kept the patient from doing any work for the previous six months. No treatment employed had ever done more than temporarily mitigate these symptoms, and nothing had ever removed them, even temporarily. (2) *Condition of the Abdomen:* The abdomen, on account of the greatly enlarged spleen, was exceedingly tense. The spleen was quite immovable on change of the patient's position. There was a moderate amount of ascites present. The outline of the spleen, as determined by palpation and percussion, was marked out on the surface of the body, and a photograph taken on September 30, 1903, which is herewith presented. The measurements, as set down on September 30, were as follows: Circumference of the abdomen at the navel, 95 cm.; tumor extends 12 cm. below level of navel, 5 cm. to right of median line below level of navel, but not to right

Fig. 1.



Photograph of patient, W. A., taken September 30, 1903; showing outline of splenic tumor.

above level of navel; total vertical dimension of dulness 39 cm. Patient's weight at this date 175 pounds. (3) *Condition of the Blood:* This examination was made for me by Dr. H. R. Oliver, instructor in pathology in Cooper Medical College. It showed on October 1 the following count: Red corpuscles, 2,508,000; white corpuscles, 126,000; hemoglobin, 47 per cent.

With these data obtained, X-ray treatment was begun on October 1, 1903. Arsenic and all other drugs were then discontinued, and none have been given since the X-ray was begun. The applications were all made for me at Lane Hospital by the internes there—Dr. George Coleman, Dr. Charles Coleman and Dr. Garth Parker.

Mode of Application.—Throughout the course of treatment the static machine and the street current were used, one about as often as the other; and a "soft" or low vacuum tube made by Queen. The duration of treatment was usually twelve to fifteen minutes. The tube was almost invariably held at a distance of ten inches from the body, but in a few instances as close as eight inches. The site of exposure was the splenic tumor as a rule, either directly in front or on the left side. Whenever there was any skin reaction, even the slightest, the splenic area was let alone for the time being and the applications made over the long bones—thighs and legs especially and the sternum less frequently. At first the exposures were made once each day; but it was soon found that the skin would not tolerate this frequency, and therefore the plan was adopted of giving them every other day. Once or twice treatment had to be interrupted altogether for a week or more because of dermatitis. During the nine months, October 1, 1903, to date, the patient received in all 144 applications.

Effects of Treatment.—Reviewing these in the same order as the data considered at the outset, I will speak of (1) the *Effects on the General Condition:* This promptly showed improvement. At the end of the first week of daily treatment, the patient reported that he felt much better, did not tire so easily, could walk further, and could eat without abdominal distress. From October 11 to November 7 treatment had to be interrupted part of the time because the X-ray apparatus was out of order, but mainly because of an extensive burn at the site of application. But it was resumed November 7, and though treatments were never daily thereafter, the patient by the end of November reported that he felt perfectly well; he had lost his pallor, looked well, had gained ten pounds in weight, and felt none of his old symptoms of weakness, dyspnea, and abdominal distress. From that date on to the present time his invariable report has been that he feels perfectly well and would not know anything was the matter with him except for his enlarged abdomen and his blood counts. He went back to his old occupation on December 1, 1903, and has worked every day continuously since that date. It is absolutely certain that his health is better now and has been better since November, 1903, than it had ever been at any time during the previous year and a half he was under treatment, before beginning with the X-ray; and it may be asserted with equal positiveness that from a symptomatic standpoint the man is cured.

But the other manifestations of disease have not kept pace with the symptoms. As regards (2) *the Effects on the Condition of the Abdomen*, improvement has certainly occurred, but restoration to the normal has by no means been accomplished. Change here has been very slow, and is even yet more subjective than objective. The first effect noted was the disappearance of free fluid from the abdomen, which was no longer demonstrable after the end of November. Gradually also the spleen has become more freely movable within the abdomen; and the tension has undoubtedly decreased, so that the wall has become less resistant to palpation. But the measurements, made regularly once a month, have shown very little change from those found

Fig. 2.

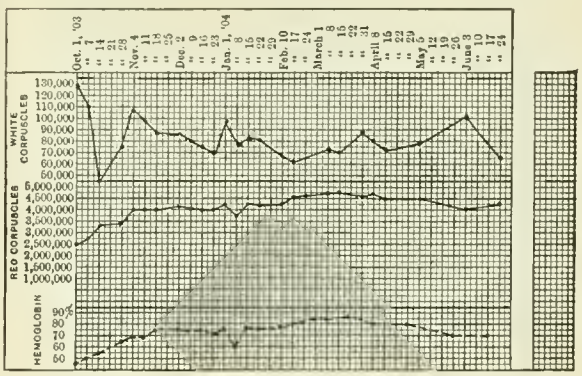


Chart showing condition of the blood during the nine months patient was treated by X-ray; the straight black line at the top indicates continuous treatment, while the breaks indicate interruption of treatment.

at the outset of treatment. The circumference at the navel has never been less than 94 cm.; the distance of the tumor's extent to the right of the median line has never been less than 3½ cm.; and the distance below the navel never less than 7 cm.—this latter dimension being the only one that has shown any decided decrease. At the present writing it must be admitted that, while the patient's general appearance and nutrition is improved, the contour of his splenic tumor has not materially changed. (3) *Effect on the Condition of the Blood.*—For my knowledge of this I wish to thank Dr. Oliver, who has made regular examinations all during the time of treatment. His findings are given in the accompanying blood chart. The effects of treatment on the blood will be best considered by taking up the various elements separately. *A. The White Count.*—Here the least effect has been produced. The chart

shows that while at the outset the white corpuscles numbered 126,000 and have once fallen as low as 45,000, they have never approached more nearly than that to the normal, and most of the time have fluctuated in number between 70,000 and 90,000. There is apparently a definite relation between the frequency of the X-ray applications and the decrease in the white corpuscles. During the initial period of treatment, when it was given every day the whites rapidly tumbled from 126,000 to 45,000 in two weeks. Then as treatment had to be discontinued because of dermatitis, the whites steadily rose again to 110,000. When treatment was resumed they once more gradually fell to 70,000. Similar fluctuations have so repeatedly been observed, apparently dependent upon the regularity or irregularity of treatment that it would seem to be more than chance that has determined their occurrence. *B. The Red Count.*—Here there has been noted a remarkable improvement since X-ray treatment was begun. The red corpuscles promptly rose during the first two weeks from 2,608,000 to 3,250,000. Then, while treatment was suspended, they remained stationary about that point, but when treatment was resumed they again increased until they numbered 4,000,000. They have practically never since fallen below this point, and have been as high at one period as 4,750,000. *C. The Hemoglobin.*—This likewise has markedly improved, following closely the curve of the red corpuscles. On October 1 it was but 47 per cent. Then it steadily rose until by the end of November it was 75 per cent. It has since remained about this line or slightly above. *D. The Myelocytes.*—These have decreased since treatment was begun, but have never disappeared from the blood. On October 1, 1903, they numbered 48 per cent; on June 25, 1904, when the last count was made, they numbered 27 per cent., and this is the lowest percentage found at any time since the patient has been under observation. *E. The Nucleated Red Corpuscles.*—These quickly disappeared after the X-ray treatment was begun. On October 1, 20 were counted, on November 4 only four, and after that never more than one was seen—all the differential counts being on the basis of 400 white cells counted. In the past three months no nucleated reds at all have been seen.

Bad Effects of Treatment.—None such were at any time observed, except the dermatitis. No such evidences of constitutional disturbance, as Senn mentions in his report, were seen during the progress of treatment of this case; and "high temperature and other evidences of intoxication," such as he describes, never occurred during the months that the X-ray was used.

In conclusion, I desire to say that this case is reported simply as a presentation of facts, not to uphold any theory. Only as more such reports are made by different observers, can we arrive at any just estimate of the value of X-ray treatment in leucemia.

A COMPLETE CASE OF SYRINGOMYELIA.

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Syringomyelia is not a very rare disease, though outspoken cases of it always have a more than passing interest. In most cases, however, there is a lack of indication as to the beginning of the pathological process which causes the characteristic symptom. It is generally conceded now that the basis of the degenerative process in the spinal cord is either a congenital malformation of the cord or some destructive lesions consequent upon injury, or some pathological process in early life many years before the characteristic atrophy and sensory symptoms of the fully developed disease. The case that we are about to describe has in its history evidence of the preliminary pathological condition which led to the formation of a cavity or tumor in the cord later in life.

Fig. 1.

Atrophy and dissociation of sensation in area outlined.

The patient was a young woman of about twenty-one years of age, who came to the Out-

door Department of the Presbyterian Hospital presenting well-marked symptoms of syringomyelia in her left hand. With the exception of this condition she is now perfectly healthy, but she recalls distinctly that some fourteen years ago she suffered from an attack of weakness and paralysis in this same arm. She does not remember exactly all the details, but thinks that this came on rather suddenly and at a time when she was perfectly well just before. On close questioning, however, she confesses that she had about the same time what she calls a "rising on her face." This, manifestly, from her description, was a large boil. The possibility of its having something to do with the condition which developed is not impossible, but as we shall see a little later, a direct connection does not seem at all likely.

She remembers that this weakness of her arm came on suddenly, and that she was unable to use her hand at all and especially for such finer movements as picking up pins and the like. Her fingers seem to have been especially affected. The paralysis that occurred, however, involved the whole arm as far as the shoulder, for she could not use the arm at all. Previous to this illness she cannot remember having suffered from any other serious affection, and she does not even seem to have had the ordinary diseases of childhood.

Her arm gradually regained its strength and at the end of three or four months she could use it as well as ever. Before the end of six months no trace at all was left of the paralysis.

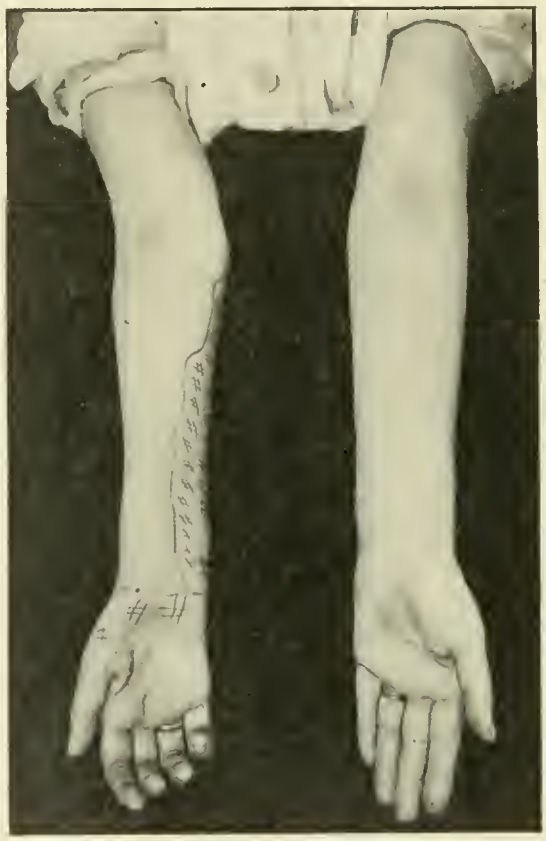
Just ten years later, that is about four years ago, when she was seventeen years of age, she began to notice that her hand trembled considerably after doing any work. She found it practically impossible to hold the fingers still at times. Increasing weakness became manifest and she found it difficult to do many things that she had been familiar with for years and had gradually to learn the use of her left hand to replace her right. Her hand was inclined to be cold and during cold weather was tremulous and very weak. During the winter time it was often so numb that she could not use it at all.

Three years ago she noticed a wasting of the muscles of the hand, especially those of the ulnar side of the hypothenar eminence becoming flattened. This wasting of muscles spread with gradual diminution of the size of the thenar eminence and with distinct wasting of the interossei muscles. Her fingers began to be overextended in the proximal phalanges, though with flexion of the distal phalanges giving a characteristic appearance of beginning claw hand.

The present condition as regards the muscles shows the flat hand of atrophy of the hypothenar and thenar eminences, both having disappeared, and the distinct beginning of main en griffe. In the affected area which extends somewhat above the elbow there is some temperature sense disturbance, but this is comparatively slight. The pain sense, however, is seriously disturbed, and over an area some eight inches long on the ulnar side of the forearm there is complete analgesia. In this same area she feels touches very well and recognizes heat better than cold. This dissociation of sensation points, of course, to disturbance of the sensory tract immediately surrounding the central canal in the lower cervical region and makes it evident that the diagnosis of peripheral symptoms of syringomyelia.

The interesting problem in this case is the etiology of the condition. It has generally been

Fig. 2.



Atrophy and dissociation of sensation in area outlined.

conceded that syringomyelia develops either on a basis of some congenital malformation of the cord or on a hematomyelia, either spontaneous or traumatic. Even where the predisposing element in the case is a congenital lesion it is usually considered that a hemorrhage taking place into the cord constitutes the first step in the further progress of the case that eventually leads to the appearance of the characteristic peripheral symptoms of syringomyelia.

The occurrence of the first paralysis of the arm for fourteen years before the present condition and over ten years before the first symptom of syringomyelia was noticed, seems to make it

clear that we are not in the presence of a congenital malformation as the basis of the condition which has developed. The complete recovery from the first attack and the long interval of absence of symptoms would seem to preclude the impossibility of there having been a serious defect in the cord which predisposed it to a hemorrhage or to some other pathological lesion at the time of the first set of symptoms.

The symptoms that developed on that first occasion point to the occurrence of a hemorrhage or thrombosis or embolism. To consider them in their reverse order, embolism seems unlikely because the source of it would usually be found in some affection of the endocardium and there is no history of anything like that, and an examination of the heart at the present time reveals no signs of an old endocarditis. With regard to thrombosis, the question is less easily disposed of. At the time that her first set of symptoms developed she was suffering from anemia. She has, indeed, during the most of her life, been rather poor in blood. It is well known how often it happens in anemic cases that a sort of spontaneous thrombosis occurs. If the blood vessel to a portion of the cord were shut up in this way the result would be a necrosis of surrounding tissue quite as effectually as if there were a hemorrhage.

It has come to be usually considered, however, in these cases, that a hemorrhage is the most likely preliminary lesion on which the subsequent developments take place. This may be either spontaneous or traumatic. Spontaneous hemorrhages are quite possible and have been noted in a number of cases. Often there is a suspicion of trauma, but this cannot be determined, owing to the defective history. If a hemorrhage be supposed to have occurred in this case, there came as a result an overgrowth of connective tissue which contracted into a scar. The irritation set up by this led to the development of gliosis of the cord, affecting mainly that portion of the cervical cord lying around the spinal canal on the left side. This would afford a very satisfactory explanation of the condition which has now developed.

With regard to the possibility of an infection from the boil on her face, it seems to have existed at the time of the primary paralysis—it may be said that if there were an infectious embolus at that time in the cervical portion of the cord, it would surely have caused secondary infection in the neighboring area, and this would have produced a more lasting and more extensive set of symptoms than was observed.

There is one important point in the treatment of these cases. Owing to the dissociation of sensibility they are likely to suffer from various lesions, especially from burns and at times from rather severe trauma in the affected part. Owing to the lowered condition of the trophic nerve supply to the part these injuries heal very slowly and are rather obstinate to all ordinary treatment. It is important then to warn patients suffering from beginning syringomyelia of the necessity of taking the greatest possible care of the affected member, in order to avoid the accidents to which it is liable, because of the disturbed sensory condition of the part. Beyond this there is not very much to be done and of course the outlook is absolutely unfavorable, since there is no hope of any decided improvement, to say nothing of cure.

THE CONVEYANCE OF YELLOW FEVER.[1]

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I will say nothing of the history of my subject. It is interesting to read the many theories advanced for the causation and prolongation of yellow fever; especially the arguments for its conveyance by "infected air," and its "spontaneous origin" under specified conditions. Nor is such a review altogether unprofitable, but the interest is speculative now rather than practical, and it would take time. I cannot even take the time to give the history of the evolution of the doctrine I shall advocate, although I should like to show you how blind we were to Dr. Finlay's arguments until Reed's demonstration compelled us to see.

I simply propose to announce what I think to be *the true doctrine* of the propagation of yellow fever, and to give briefly my reasons for the faith that is in me.

This is the proposition—the "creed," so to speak, of the doctrine: *Yellow fever is conveyed from the sick to the well by a mosquito host, the Stegomyia fasciata, contaminated by feeding on the sick man; and, in nature, it is only thus conveyed.*

It does not seem necessary to discuss the first part of this proposition, as I am sure you all accept the statement that yellow fever *is* thus conveyable. It is a positive proposition and thus admits of positive evidence, and that evidence is satisfactory and abundant. The American Commission, of which Reed was chairman, reported, first and last, 12 cases thus conveyed; Reed and Carroll, two; Guiteras, eight cases; Parker, Porthier, and Beyer, at Vera Cruz, one case. The second party at Vera Cruz, one case; the Pasteur Institute Commission at Petropolis, four cases; Ribas and his confrères at Rio Janeiro also reported successful experiments, but I have not seen their report and do not know the number of their cases. Indeed, all who have tried to convey yellow fever in this manner have succeeded. I do not think, then, that any of us doubt that yellow fever is thus conveyable.

Note, please, the conditions under which this conveyance occurred in the experiments noted: (1) A particular kind of mosquito was used—*Stegomyia fasciata.* (2) It bit a patient in the

[1] Read before the Texas State Medical Association, April 27, 1904.

first three days of yellow fever. (3) It was kept a considerable time—twelve days was the shortest time—and then bit the well man.

After once acquiring the power of conveying yellow fever, for which a certain time after biting the sick man is necessary, the mosquito seems to retain the power indefinitely; at least one of Reed's mosquitoes conveyed yellow fever fifty-nine days after feeding on a yellow fever patient.

Given the above conditions, yellow fever was produced with reasonable constancy. A few men, very few, were found to be immune to this method of conveyance, and not every mosquito bite conveyed yellow fever even to those who subsequently succumbed to mosquito bites.

Let us inquire into these conditions one by one and see if we can tell what are the essentials of this method of propagation of yellow fever.

1. The kind of mosquito. So far, except one trial of *Culex pungens*, only the *Stegomyia* has been used for experiment. It seems idle then to speculate if some other genus or species of mosquito will not also act as host. Analogy would lead us to suspect that some other species of *Stegomyia* would do so, but that no mosquito not of this genus would. The genus, and this species of it, is widely distributed in hot countries. Obviously we cannot exclude such species as are found in places where yellow fever does not spread when introduced. And here let us notice that if yellow fever is conveyed by only one genus or species of mosquito, then it is conveyable only where and when that particular mosquito is found, and is active, and that arguments concerning its conveyance drawn from the habits of *other* mosquitoes are valueless, unless these habits are common to the *Stegomyia* also; and the habits of the *Stegomyia* are in many respects different from those of other mosquitoes.

Nor does the presence of mosquitoes in a place in any wise imply that yellow fever can be propagated there, unless they are *Stegomyiæ*. I would not state facts so obvious unless I had seen the need of it. I was asked, "How can you say that a vessel a few hundred yards off shore is safe from the invasion of infected mosquitoes, when you yourself say that you have seen swarms of mosquitoes come aboard a mile out at sea?" Now the "infected mosquitoes" *Stegomyiæ*, and the "salt-water" mosquito, a *Culex*, that boarded me off shore were a different thing altogether.

A gentleman, an excellent physician, too, asked why, if mosquitoes conveyed yellow fever, could one explain that a certain hospital where yellow fever was treated remained uninfected, "although being close to the marsh it was swarming with mosquitoes." There was no evidence to show that these were *Stegomyiæ*. Indeed this variety is not, as a general thing, found in marshes.

2. In all the experiments the patient was bitten in the first three days of yellow fever. Is this the limit of time during which he can infect the mosquito? You can see what a very important point it is to determine this; because if it be true, a patient after this time can no longer communicate the disease even if bitten by a mosquito. The only experiments on this matter are those of the Pasteur Institute Commission. They injected blood from three cases of yellow fever, each one in the fourth day of the disease, into three subjects, it having been found that the disease was conveyed quite certainly by this method. None of these subjects developed yellow fever. One of them was shown to be susceptible to yellow fever by being bitten afterward by an infected mosquito. This commission concludes from this that the power of the patient to produce infection lasts only three days. Yet this seems to me too absolute a conclusion for the number of observations made. Unquestionably the blood of *these* patients did not convey yellow fever, but I would prefer to see more experiments on this matter before I regard it as settled; and it is a very important one for the sanitarian. Important, because we wish to isolate the patient *only* while infective, and if three days is the limit, we will not isolate him longer. Not only for his sake, but for our own. My experience has been, and I think all health officers will confirm me, that restrictive measures of sanitation, especially if domiciliary measures are used as well, are hard enough to carry out any way, and that the less we require, provided it be all that is necessary, the better will the work be done. The enforcement of unnecessary measures of that kind is generally at the expense of some essential. As of old, the tithing of mint, anise and cumin leads to the neglect of the weightier matters of the law.

3. How long must the mosquito wait after biting the yellow fever patient before it can communicate yellow fever? How long does it take for the infected mosquito to become infective?

Now, before Reed's work in Cuba, I had determined the existence of a period of time—and a considerable period of time that must elapse after the development of a case of yellow fever in an uninfected place before that place became infective. During this time yellow fever could not be contracted in this place. This period, the length of which I could only approximately determine, I had called the "extrinsic incubation" of yellow fever. I did not know the explanation, yet the knowledge of *the fact* was of great service to me in epidemic work. It was, of course, the time that it takes for the mosquito after biting the sick man to become infective. This time depends on the temperature—as do all of the processes of, and in, the mosquito—being longer in low temperature. The shortest time in which this power of conveying infection has been manifested in the experimental cases, was twelve days. It was usually decidedly longer than this in Reed's experiments, most of

which were in the winter. The twelve day case was in August. It seems to be accepted that twelve days is the shortest time in which an infected mosquito can come to be infective, and this agrees with my own crude determination of the minimum period of extrinsic incubation—"somewhat over ten days" and yet I cannot think that this has been *experimentally proven*. Not enough attempts have been made during hot weather with mosquitoes for less than twelve days. The determination of the minimum of this period is of interst, but not of great importance.

I am sorry to confess that we have not found the micro-organism of yellow fever, although it has been assiduously searched for both in human blood known to contain it, and in the mosquito; yet some direct observations have been made on it. In the blood, at least, it exists in an ultramicroscopical form, as was first shown by Carroll working on lines laid out by Reed and himself. He found that blood serum filtered through a Berkenfeld filter, would still produce the disease. This was confirmed by the Pasteur Institute Commission and, in my opinion by the working party at Vera Cruz, the Pasteur Institute Commission found that serum passed through a Chamberlain bougie B would convey infection, while that passed through a bougie F would not, thus determining within the limits the size of the smallest of the infective germs. I say, "the smallest infection germs" advisedly, because they *may* exist in the blood in different forms—as the *Plasmodium malariæ* often does—and only the small ones pass the bougie B.

It is worthy of note that the direct injections of blood and serum, filtered and otherwise, seem to differ from mosquito inoculations in the length of the period of inoculation. Of 24 mosquito inoculations in normal individuals, of which the period of inoculation was accurately recorded, the shortest was two hours less than three days, and the longest two hours over six days, and all save these two were between three and six days. With this agrees my own observation of the period of incubation of 12 cases of yellow fever, naturally contracted, each with a single, short exposure—all of which gave incubations of from three to six days. Now in the 14 cases of blood and serum injections, the time varied from one day and twenty hours to twelve days and eighteen hours, three of the cases being eight days and five hours, 9½ days, and 12¾ days. Whether there is a real difference, or whether these mosquito inoculations and my observations *happened* to have no very long or very short periods of incubation, I cannot say. Only as we have 36 of these cases recorded, and this is the natural way of conveying the fever, I would rather base my sanitary measures on the data from them than on the results of direct injection of blood.

The organism is very easily killed; blood heated to 55° C. for five minutes is no longer infective, and it soon dies in blood exposed to the air, although blood five days old covered by oil of vaseline is still infective.

So much for this positive part of our proposition, that yellow fever *can* be conveyed in the manner stated.

The second part of it is different in its very nature. It is a *negative* proposition. To say that "yellow fever is only conveyed by a mosquito host," is saying that it is not conveyed in any other way—in any one of the many other ways which might be claimed as the true one—and, to proceed logically, one should examine the evidence advanced for every such way of conveyance and demonstrate its futility. There are two reasons why I do not do this: (1) because it would be almost unending, and (2) because, as I do not believe that it is conveyed in any other way, I might not state the arguments for the affirmative fairly. To demolish a man of straw of one's own making, is seldom convincing. Yet I will give a few reasons why we should accept the conveyance by a *Stegomyia* host as the only means by which it is naturally conveyed. I say "naturally conveyed," meaning the way yellow fever is contracted naturally during epidemics. The disease can be conveyed, as we have seen, without the mediation of a host by the hypodermatic injection of the blood of the patient, but that surely is *not* a natural conveyance.

Analogy.—Of such diseases as have been fully investigated, all that are conveyed by living hosts are conveyed naturally in no other way. This is a biological law.

Familiar illustrations are malarial fevers and Texas cattle fever, which is very like yellow fever in its epidemiology; and there are a number of diseases of the lower animals thus conveyed, and for all this law holds. The facts observed of the natural propagation of yellow fever agree with this theory and are explained by it.

For instance, the fact that the disease is not directly propagated from the sick to the well, that it is propagated only by means of an infected environment, that a man sick of yellow fever may infect his environment.

By our theory he infects the mosquitoes which bite him, and the presence of these infected mosquitoes constitutes the infected environment.

The existence of infectible and non-infectible places.

An "infectible" place, as you know, is one which, if cases of yellow fever be introduced therein, becomes infected—*i.e.*, capable of inducing yellow fever in those who visit or live there. A "non-infectible" place is one which will not become infected even if cases of yellow fever be introduced. In such a place yellow fever is not a transmissible disease. The theory of conveyance by a host would explain this difference by the presence of the proper host (*Stegomyia*

fasciata) in the one and its absence in the other.

The relation of the spread of yellow fever to cold weather, altitude and excessive dryness. The very conditions under which *this mosquito* —mind you, I do not say "mosquitoes"—thrives best suit the propagation of yellow fever.

The close correspondence of the periods of incubation from infection in the natural way—12 cases observed by myself—with the periods of incubation after mosquito inoculation—24 cases. Yellow fever caused by the hypodermatic injection of blood or strained serum from a yellow fever patient has not shown the same agreement in its period of incubation with that naturally contracted. It may be because this is not a natural method of conveyance.

The existence of a considerable interval seldom under two to 2½ weeks, between the infecting and the first "secondary" cases of yellow fever. I mean that when a case of yellow fever, contracted elsewhere, develops in a non-infected place, no case will develop from the first one until *after* about two weeks, and that then we are apt to have a considerable number together as our first crop. Now this time is decidedly longer than the period of incubation of yellow fever, and since it is an invariable phenomenon, it can only mean that the place requires a certain time after receiving infection from the sick before it becomes capable of inducing yellow fever in others. This of course is the "extrinsic incubation" we have spoken of before, and its usual minimum duration, which had been fixed by observations of yellow fever naturally occurring as somewhat in excess of ten days" (the first secondary cases usually occurring in the third week) is too close to the period, twelve days as a minimum, which Reed observed between the date of the feeding of the mosquito on the yellow fever patient and the date on which yellow fever was conveyable by the same insect, for those periods to be due to different causes. That cause in Reed's cases was the incubation in the mosquito. The same phenomenon is observed with malarial fever—*i.e.*, a certain time must elapse from the infection of the *Anopheles* by the ingestion of the *Plasmodium malariæ* before it is capable of producing the disease in those whom it bites, and so with other diseases caused by parasites conveyed by living hosts.

Indeed, this phenomenon and the fact that some places are infectible, and some not infectible by a yellow fever patient, with no reason which we could assign for the difference, are, taken together, scarcely capable of any other explanation than conveyance by the host.

Indeed I do not know one single fact established concerning the natural propagation of yellow fever which does not agree with the doctrine of its conveyance by the *Stegomyia fasciata* as a host.

3. Measures founded on this doctrine have given the results which were to be expected of them if it were true. And this I hold to be most convincing evidence.

In 1899 and 1900 "campaigns of cleanliness" were waged against the yellow fever in Havana. All the money that could be called for was forthcoming, and all the men. Skilled engineers were in charge with the whole force of military power behind them. In 1899 General Ludlow was in command and Major Davis was chief sanitary officer; in 1900 it was General Wood and Major Gorgas. And I can give you my word that the work was well done. Havana was as clean as a cobblestone-paved city can be kept. We began, too, with a city almost free from yellow fever. There had been but 31 deaths from yellow fever among civilians the year ending March 31, 1899, and there were only five more in August.[1] The fever then spread, and we had that year to March 31, 1900, 111 deaths among the civil population. Less than normal, but just the same number as in 1885, when no sanitary measures were used. In 1900 the work was, probably, better organized and was certainly as well done, yet the deaths that year were 301, although this includes some among the military—say 12 or 15. The average civil death rate from yellow fever in Havana for the ten years prior to the war was 211 per annum. We had then this year more deaths among the civil population than normal in Spanish times; nearly one-third more. Indeed 1900, after all our work, gave a *higher civilian mortality than any one of the ten years prior to the war except 1893.*

Now, during this time Havana was as clean as it could be made. Patients were isolated to some extent; all whom we could get to go were moved to hospitals—probably 75 per cent.—and the premises carefully washed down with bichloride of mercury, and the fabrics disinfected by steam or bichloride or boiling. Yet, as I tell you, we had an epidemic. So far as yellow fever was concerned, the sanitary work was a failure. The next year, the plan was changed. The *Stegomyia* was accepted as the only means of conveying yellow fever and all effort was based on this belief. All cases of yellow fever were screened as soon as found, and they were found early and the screens were kept in place too. If the patient went to the hospital, the house was immediately fumigated with either pyrethrum or sulphur. If he did not, it was screened and fumigated as soon as possible; the houses adjacent being also fumigated. This was the key of the plan: (1) To keep mosquitoes from the patient. (2) To kill all mosquitoes which had had access to him.

There was, also, a general war waged against all mosquitoes in town, draining and oiling pools of water; emptying, covering or oiling water in containers. The presence of mosquito larvæ on premises was made a public nuisance and punished by fine.

These measures unquestionably did good and there was certainly a tremendous fall in the mortality in all malarial fevers; but the essential of the work for yellow fever was, as I have said, *to keep mosquitoes from the patient and to kill those which had had access to him.* Nothing else was done. The bedding and clothing of the sick were not touched, nor the bedding and clothing in the houses where they were taken sick. Now the result.

Yellow fever disappeared. There were about the usual crop of cases in the spring, but there was no spread. Some were introduced from Santiago de la Vega and other places outside of Havana, but there was no spread to amount to anything. Cases, a few, were brought on the vessels from Vera Cruz, taken to the yellow fever hospital and screened, and there was no spread. Gentlemen, this was not luck. It was not accident. Havana had had yellow fever for 140 years. It was freed from it in the summer of 1901, *by the measures taken.*

I am glad that the same man, Dr. Gorgas, had charge of the sanitary work in both 1900 and 1901, so that everything should be the same except the *plans of the work* and the *difference of the results*—in 1900 a failure; in 1901, a brilliant success. Could this have happened if there had been any other means of conveying yellow fever except the insect host? What else will screens exclude? What else will insect powder kill? Remember the bedding, clothing, etc., of the patients were not touched.

There has been no yellow fever in Havana since—that is, none contracted there. You know that Havana is in weekly communication with Vera Cruz and other Mexican ports, receiving a considerable number of passengers by each vessel. How has she kept infection from being introduced from these ports? There is a maritime quarantine at Havana just as at all seaports among civilized nations. As Dr. Finlay directs it, the quarantine for yellow fever is naturally based on the assumption that the *Stegomyia* is the only agent of conveyance of that disease to man. Passengers not immune to yellow fever are retained in quarantine across the bay five days from their last presumable exposure to yellow fever before they are allowed to enter the city. Vessels which may be infected with yellow fever (*i.e.*, which may have infected *Stegomyiæ* on board) are not allowed at the wharves or to be boarded by non-immunes until after fumigation to destroy mosquitoes.

Baggage of all kinds from Vera Cruz, Tampico, and Merida, even that of people sick of yellow fever, is passed without disinfection.

People arriving with yellow fever are taken at once in an ambulance screened with mosquito wire, to the yellow fever hospital. This is a ward screened and with double screen doors in the general hospital in the city of Havana. A number of such cases have been thus treated and there has been no spread. No spread was expected by those in charge, and I venture to promise that there will be no spread as long as the present system is carried out.

Look at this quarantine! With passenger traffic, from infected ports, with its protective measures directed only against mosquitoes; with absolutely no disinfection of baggage and yet giving a perfect result.

The same regulations had been in effect at a number of our southern ports, those of Virginia, North Carolina, Georgia, Florida, and Mississippi, the past year—for the United States regulations are also based absolutely on this doctrine, and require only what is given above—and with the same result. Could this be if yellow fever were conveyed in any way except by an insect host? Could it be if fomites could convey yellow fever?

Fomites! A while ago I said I knew of no fact in the propagation of yellow fever which was not consistent with the doctrine of its propagation by a host. I am sure some of you thought of "fomites" then. I promised not to set up a man of straw and demolish him, and yet, as I used to believe in this means of conveyance myself, it may be that the arguments which convinced me that I was wrong may have weight with some one who believes as I did. Obviously, if yellow fever can be conveyed by formites, the doctrine that it is only conveyed naturally by a mosquito host, is untrue.

I believed it, the conveyance by fomites, (1) from the analogy with other infectious diseases, smallpox, measles, etc., and (2) because everyone else did. The doctrine was not disputed and I did not examine the evidence for it critically. Yet even before Reed's first paper, I had come to rather more than doubt—almost to disbelieve—that *fabrics* conveyed yellow fever, although I *knew* that *ships* did. My mind was not changed simply to accept this theory. In the first place, all the yellow fever outbreaks which I myself could trace, a man sick of yellow fever was the starting point. There were many which I could not trace. In some such outbreaks, fabrics from infected places had come in, and in the vast majority no such fabrics could be traced. None of the reported cases of conveyance by baggage which I could personally investigate, excluded other means of conveyance.

Then I found that for the 220 years preceding 1899, the baggage from Vera Cruz, Havana, and Santiago de Cuba on vessels arriving at New York, unless with yellow fever en route, entered without disinfection. The amount of this baggage from Havana and Vera Cruz was large, and it was not impossible but that much of it came from houses infected with yellow fever, and much of it was not clean. All of this baggage was presumably opened at the custom house at New York, and it was opened at hotels there and at Saratoga, and no yellow fever was reported among the customs inspectors in New York, or at the hotels during this time.

The baggage going from the same ports to Spain for the twenty-nine years preceding 1899, was even more to be considered. Its amount was enormous. Much of it must have been foul. Yet no yellow fever was reported in the Peninsula since the epidemic of 1870.

Of course, negative evidence is convincing only in proportion to its mass, and that a piece of baggage, or 100 pieces of baggage, from an infected place did not convey infection to those exposed to it, means little, yet the amount of this baggage was so large—I cannot estimate it at less than that of 300,000 persons from Havana alone, not to count Vera Cruz and southern Cuba —that we must claim that a very large amount of baggage from infected houses had been introduced into New York and the Spanish towns; that numbers of susceptible people had been exposed in these places under various conditions, but had *not* contracted yellow fever.

To me the mass of this evidence was sufficient to be convincing, and I counted it *proven* that baggage from Havana and Vera Cruz would not convey yellow fever to people in New York or Spain, nor could I deny that baggage did not convey yellow fever in New York or Spain, but it would do so in the South. I knew that yellow fever was communicable from a sick man only by infecting his environment and hence only in an "infectible locality," but the contrary had always been the teaching for fomites. That infection could be *directly* conveyed to man by fomites is the doctrine which had been universally taught. All the instances reported of conveyance by fabrics of which I had cognizance were either explicitly ascribed to, or explicable by, this direct conveyance. Now, if the "infected" fabrics could convey yellow fever directly to men, obviously they would convey it to susceptible people who come into direct contact with them in any place whether the locality be "infectible" or "non-infectible." Therefore, as against the possibility of direct conveyance of yellow fever from fabrics to men, the data from New York and Spain, which I have given above, if conclusive for those places, were conclusive against such conveyance in places known to be "habitually infectible."

As to the positive instances of conveyance by baggage, which had been reported, none that I was able to inquire into personally certainly excluded other methods of conveyance. The reporter begins with the assumption that yellow fever is conveyed by fomites, and as soon as he can show the introduction of fomites from an infected place, he is satisfied. He looks no further for any other source of infection. Strange to say, the best-attested cases I came across were not those of conveyance by *packed baggage,* but by *clothing worn on the person,* sometimes for a number of hours, through the sun and air, which was against all other experience of this disease.

Also it is common sense that when there is a great mass of negative testimony on a subject, all tending one way, we may not accept a moderate amount of positive evidence in rebuttal unless its data be conclusive, and I thought the evidence of the Cuban and Mexican baggage great enough for this rule to apply.

Note, too, that the argument for conveyance by fabrics was really a negative one. The reporter says "there was no possible source of infection except the fomites." He means that he knows of no other. Exactly the same argument was used, and logically, for the spontaneous origin of yellow fever. Cases were cited for which no exposure to *any* source of infection could be made out, and the statement was made that there *was* no exposure. From this, if admitted, the admission of the "spontaneous origin" of the cases was a necessary consequence. These cases were (indeed are) not a few. They were reported with as much detail, and with as much care, and by as good men, as those for which no exposure except to fomites was known. The argument for the spontaneous origin of yellow fever, and that for its conveyance by fomites, both depend on our accepting that there were no exposures unknown to the reporter. They stand or fall on the same class of evidence.

As to the cases of infection carried by clothing worn on one person, which I have said seemed the best stated of all which I had cognizance, I know that a large number of passengers had been coming during all seasons of the year from 1888 to 1898—ten years—from Havana to Key West and Tampa, with no disinfection of the clothing they are aware of, and yet Key West and Tampa had kept free from yellow fever. It was not possible that the thousands who thus came over should have carried no infection if clothing worn on the person could carry it. There must then be some other explanation for the few cases reported in the United States. I think, then, that I was right to count the conveyance by fabrics as "not proven" on this evidence.

In addition I did not have what you now have: (1) The experiments of Reed, of Ross, and of the Pasteur Institute Commission. In these a number of persons were exposed for days and nights to bedding and clothing used in every conceivable way about yellow fever patients. None of these people developed yellow fever from exposure, although a number of them did when subsequently bitten by contaminated mosquitoes. To be fair, I wish to admit here what the fact that Reed's experiments with fomites were done late in the year detracts from their value. This, however, does not apply to the other two. (2) The freeing of Havana from yellow fever by Gorgas, although the clothing and bedding were not disinfected. (3) The continual experiment which the Havana quarantine and many of our own stations have been giving us in letting in baggage from yellow

fever ports without any disinfection, and yet with no introduction of yellow fever.

Note that in these last two the fomites which did not convey infection were in infectible places in the yellow fever season.

If I had had all this evidence in addition to that which convinced me, I would, I think, scarcely have considered conveyance by fomites worthy of discussion. And that whether I knew of any other method of conveyance or not.

Let us see what we have said. There is no question in any man's mind that the mosquito *Stegomyia fasciata,* acting as a host, does convey yellow fever from the sick to the well. That this is the only method of conveyance, the argument is: (1) The analogy of other diseases conveyed by living hosts; (2) that the facts observed of the natural propagation of yellow fever agree with this theory; (3) that measures based on this theory have given the very results which they should have given if the theory were true; (4) no other natural method of conveyance is proven.

ENDOTRACHEAL MEDICATION.[1]

BY J. J. RICHARDSON, M.D.,
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The successful treatment of many of the diseases of the respiratory organs, notwithstanding the rapid advances within recent years in their pathology and bacteriology, is a problem yet unsolved. Any advances along these lines are of more than passing interest, not only to the profession, but to the laity as well. While the surgeon has been penetrating all the cavities of the body with impunity, the practical therapeutist has been none the less aggressive, and among other things has taught us to look upon the larynx as an open door to a new field of medication.

We have in intratracheal injections a valuable method of treating many of the inflammatory and infective diseases of the lower respiratory tract. Those who do not employ it are depriving themselves of a most effective means of medication. It is simple, safe and practical. Diseases below the larynx, owing to the prevailing opinion of their inaccessibility and sensitiveness to local treatment have been treated mostly by internal medication. Sprays and vapors have been used to a considerable degree and can be made to penetrate quite deeply, but the quantity of the drugs reaching the parts is so small that as a rule little real benefit results. We all favor the local treatment of diseases of the nose, pharynx and larynx, and it is only rational that similar changes taking place in more remote parts should not be treated along the same lines and with equally satisfactory results. It is entirely practicable to medicate the whole bronchial area and reach portions of the lung by absorption through the pulmonary lymphatics.

The first impression naturally is that violent coughing would be produced, but this is erroneous. Indeed, it usually produces no more disturbance than an ordinary application to the nasopharynx or larynx. The usual objections urged against it are groundless. Some claim that it possesses no therapeutic value, others that serious interference to the function of respiration may result, that it produces nervous shocks, spasm of the glottis, etc.

The technic of the injection is simple. The patient should be seated in front of the operator, the light placed along the side of the head, the mouth held wide open, the tongue protruded and held firmly by the patient. With a frontal mirror the light is focused on the pharynx—a laryngoscope placed in the illuminated zone which gives the image of the epiglottis and glottis. The canula of the syringe is then directed over the epiglottis, and during an inspiration by making a sort of see-saw motion of the syringe from below upward, is made to penetrate between the vocal chords and pass the first rings of the trachea. The syringe is then relieved of its contents, while the patient inhales slowly and deeply. This is the all-important point to be observed in making successful injections. Only rarely is severe coughing produced, and when it does occur is often due to the unskilful introduction of the fluid.

In hypersensitive throats it is frequently necessary for the first few treatments to use a two-per-cent. solution of cocaine as a spray to overcome the pharyngolaryngeal reflex. There are patients who can be successfully injected by simply depressing the tongue and guiding the syringe directly over the tip of the epiglottis into the larynx and trachea. I have practised this method frequently in cases where the pharyngeal reflex was not hypersensitive with just as satisfactory results as where the mirror was employed. I have had no experience in treating children by this method.

The success in making the injections will depend in no small measure on the selection of the syringe. The one which I have found most satisfactory, and the only one, is Shradel's, manufactured by Tiemann & Co., of New York. It consists of a glass barrel inclosed in metal and having a spiral spring attached to the piston. When the syringe is filled with the liquid for injection, it is relieved of its contents by gentle pressure with the index finger on a small spring, that allows the liquid to flow out quickly or slowly, according to the will of the operator. The canula is about eight inches in length, and is of the proper curvature for its introduction and passage through the larynx.

The selection of the medicaments for injection is of paramount importance. In general they should be antiseptic, stimulating, non-irritating and soluble in the vehicle employed. In the early days of intratracheal medication watery and mucilaginous solutions were used, but they proved too irritating. Within recent years oily solutions have been employed, with results that

[1] Read before the Clinical Society, Washington, D. C., April 11, 1904.

warrant their continuance. The therapeutic agents that I have used mostly have been the volatile essential oils eucalyptus and thyme, combined with menthol, camphor, creosote, iodoform or orthoform, according to the indications of the case, with sterilized olive oil as a vehicle. By the use of the oils in this way, we get a *double action.* They are absorbed and then re-eliminated by the pulmonary mucosa—thus insuring modification of the whole subglottic breathing tract.

Various experiments have been conducted on human beings and inferior animals, demonstrating the rapid absorptive and eliminating function of the bronchial mucous membrane. The injections should be given daily, and one or two drams of the liquid may be injected at a time. I frequently give two or three injections at one sitting. A great factor in favor of this treatment is that it does not disturb digestion or interfere in any way with other treatment which it may be desirable to carry out in conjunction with it. The diseases treated have been bronchitis, bronchial asthma, tracheitis, bronchiectasis, and pulmonary tuberculosis. Its greatest field of usefulness is in the treatment of bronchitis. The mixture which has proven in my experience the most beneficial in this class of cases is five per cent. campo-menthol with eucalyptus and thyme and sterilized olive oil, or a highly refined bland petroleum. In the acute congestive stage it produces coughing, but as a rule it lasts only a few minutes, and the soothing effect which follows is very grateful to the patient. A few injections will frequently entirely relieve the cough and expectoration.

There are a great many people who have the so-called "winter cough," which develops as regularly as autumn comes, and in spite of all cough mixtures, persists till the warm, balmy days of spring. All these patients have a chronic bronchial catarrh, and improve more rapidly under the injections than any other method of treatment with which I have had any experience. No other treatment gives such prompt relief in the chronic bronchitis of alcoholics and the acute attacks which so frequently follow dissipation. Again we have the bronchitis or "bronchial weakness," we may term it, in smokers and "high livers." These patients are not successfully relieved by internal medication, but the cough, expectoration and dyspnea, a symptom which they almost all have—can be best controlled by direct medication. It is not every case of bronchitis, however, that is adapted to this treatment, nor will it ever entirely replace the older methods, but it does offer an additional means of medication whose usefulness I am sure will be appreciated as experience with it increases. In tracheitis where the laryngoscope shows the mucous membrane to be congested—the presence of scales of adherent mucus, and where there is a dry hacking cough, the injections are just as efficacious as in bronchitis.

In a few cases of bronchial asthma the acute symptoms were quickly and satisfactorily relieved, and there was notable lessening in the frequency of the attacks. The addition of a few minimums of compound tincture of benzion and chloroform to the menthol, eucalyptus and thyme is valuable. I have treated three cases of bronchiectasis by injections of the oils with the addition of iodoform, in which there was for a time marked relief following the treatment. The mucopurulent expectoration diminished, and there was a rapid decrease in the cough.

As to tuberculosis: Intrapulmonic injections, like so many other treatments for this terrible disease, have not proven by experience to be all that was hoped for in the beginning. In most cases nothing more than temporary relief can be expected. The injections have no specific effect. I am led to this conclusion by carefully observing the results of treatment in forty-five cases of the disease where the diagnosis was confirmed by bacteriological examination. I can recall a few instances where for a time the tubercle bacilli disappeared from the sputum. It was only temporary. We have in it, however, a means of alleviating the local and general symptoms of the disease in many cases better than by the internal administration of drugs. It controls the cough, decreases the expectoration and changes its character. In this way secondary infection is overcome to a great degree with a corresponding decrease of the fever and the night-sweats. Most of the patients will speak of a general sense of relief following its use. The breathing will become easier and the feeling of constriction about the chest so frequently present is greatly relieved. Many of the patients have spoken of this and the relief lasts from twelve to twenty-four hours after the treatment. It doubtless results from the local anesthetic effect of the menthol on the nerves of the bronchial mucous membrane.

Of course the dyspnea resulting from pulmonary disorganization of advanced disease is not benefited. Where there is laryngeal complication I believe the benefit is most marked, and in every case we are warranted in using it. Owing to the sensitiveness of the parts it is well to add to the compound of volatile oils, menthol and creosote, soluble hydrochlorate of orthoform for its local anesthetic effect as well as for its antigermicidal property.

Injection of Osmic Acid for Tic Douloureux.—The case of a woman, seventy-one years of age, who presented an intense tic involving the right side of the face, is reported by J. R. Eastman (*Jour. Am. Med. Ass'n*, Sept. 24, 1904). The attacks gradually worse for the past twenty years, and the usual remedies had been found ineffectual. A two per cent. solution of osmic acid was then injected into the supra-orbital, infra-orbital and dental nerves, in the manner recommended by Dr. J. B. Murphy. Ten drops of the solution were injected into each branch and two to three drops forced into the perineural fat around the nerves at their foramina of exit.

MEDICAL PROGRESS.

SURGERY.

Dermatitis of the Hand After Use of X-ray.—A severe case occurring in a physician who had employed the rays continuously since 1897, is reported by R. Mühsam (*Arch. f. klin. Chir.*, Vol. 74, No. 2), During the winter of 1900-01, a dermatitis was observed, accompanied by scaling of the skin and localized temperature. Patient then ceased to employ the rays. The condition nevertheless grew worse, the nails became brittle and showed irregular growth, the skin was dry and the hair fell out. The index finger of the right hand was most affected. Here a paronychia resulted and the nail had to be removed. The wound failed to heal and an ulcer remained, which was very painful and gradually extended, causing so much discomfort that the patient begged amputation of the finger. This was done, but the wound did not heal until nine weeks later. Examination of the digit microscopically showed the most marked changes in the vessels. The intima was very much relaxed, the endothelium swollen, and the surrounding tissue was markedly infiltrated. The changes amounted to an obliterating endarteritis. In the partial or complete obliteration of the vessels must be sought the reason for the slow healing of the ulcer.

The Treatment of Chronic Colitis.—The treatment of this condition should essentially be based on the etiological factors, according to B. V. Beck (*Arch. f. klin. Chir.*, Vol. 74, No. 1). He thinks that the diagnosis of chronic colitis due to a nervous state is insufficient, and the latter is usually the result of the colitis itself. Among 500 cases observed by the author, he found chronic inflammations present in the neighborhood of the colon in 394, and the cure of the colitis depended more or less on their removal. Of these the most frequent were perityphilitis, diseases of the gall-bladder and stomach, and lesions of the female genitalia. The cause of the colitis may also be found in local lesions—carcinoma, tuberculosis, or actinomycosis. In several severe cases after the failure of all other methods of treatment, the writer employed operative means, by which he established an anastomosis between the lower end of the ilium and the sigmoid flexure, cutting out in this wise from the intestinal tract almost the entire length of the large intestine. In five cases he had excellent results, in the sixth he used the Murphy button, which sloughed out, with consequent fatal peritonitis. Beck makes the following propositions based on the results of his experience, in formulating treatment for any given case of chronic colitis: (1) The cause of the colitis should be carefully determined in each instances and the treatment instituted accordingly. (2) If the colitis is the result of neighboring inflammatory processes, these should be attended to and if necessary by operative means. (3) When a carcinoma, tuberculosis or actinomycosis is the cause of the colitis, the local lesion should be attacked by radical or palliative operations (rececction, entero-anastomosis, colostomy). (4) Colitis found to be of different origin must be treated in a symptomatic dietetic manner. (5) Obstinate cases, which are not improved by these measures, should be subjected to the operation previously suggested. Beck claims that the large intestine is of comparatively little value in the human economy, being merely a remnant of a herbivorous type. By its tendency to the production of chronic inflammations and malignant growths, it furnishes an element of danger to the body, and may be readily cut out of the intestinal circuit without causing any disturbance in the economy of the system.

Postoperative Intestinal Obstruction.—Nothing is more discomforting to the patient nor disquieting to the surgeon than the failure of an operation, which has at the start seemed eminently successful. Charles H. Peck (*Annals of Surgery*, October, 1904) concludes that the possibility of postoperative obstruction should by no means be lost sight of after any intra-abdominal operation, but particularly so after such operations complicated by general or pelvic peritonitis. All raw surfaces should be covered with normal peritoneum, perhaps with cargile membrane, or by carefully arranged omentum. Small incisions and the gentlest manipulation are specifically indicated. The smallest possible drains should be used, if any; cigarette drains being vastly preferable to gauze. In the class of cases referred to, special care should be taken of the patient for the first few weeks of convalescence, particularly in the matter of regulating the bowels and the diet. Attacks of gaseous indigestion with colicky pains should be regarded with suspicion and treated with vigor. This treatment consists in giving enemata, gastric lavage, limited food, and posture. If, after a few hours' trial, palliative measures are unavailing, operation should be done at once, but it cannot be too positively stated that since these attacks of obstruction are usually partial in their incipiency, and are complicated either by late inflammatory swellings or by actual blocking of the lumen with coarse food, a great majority of them can be immediately and permanently relieved by palliative treatment.

Treatment of Hematemesis.—A great deal has recently been written on this subject which would justify one in believing that the sole prerequisite of the successful terminating of blood vomiting is gastro-enterostomy. F. G. Connell (*Annals of Surgery*, October, 1904) states that when such high authorities as Moynihan and Robson speak as they do in favor of gastro-enterostomy, it is but natural that the trend of surgical opinion is largely determined by their views. Moynihan says a gastro-enterostomy will prevent recurrence of the hemorrhage and lead to a rapid healing of the ulcer from which the blood comes. Munro has recently published the details of four cases of hemorrhage treated by gastro-enterostomy. All were followed by death. This fits in very pointedly with the belief of Moullin, who, in speaking of this operation for the relief of hemorrhage, says: "It is at best only a way of abating difficulties, which are better met directly, before they have attained dimensions which render this impracticable." Carcinoma, as a very prevalent, late occurring sequel is not the only contra-indication to this form of treatment. Many cases are recorded, including one by Connell, in which death was due to hemorrhage, which continued uninterruptedly after the operation. It hardly seems logical to believe that the mere putting of the stomach at rest to the degree of which gastro-enterostomy is capable, would suffice to stop hemorrhage from a good-sized eroded gastric artery. It follows, therefore, that in all cases, where it is practical so to do, radical treatment of the bleeding points should be attempted. Gastro-enterostomy is therefore indicated, first, if after a thorough search, the bleeding points cannot be found; second, when conditions are such as to make direct treatment impractical.

Sacculated Aneurism of the Aorta.—Since it seems quite possible that the Matas technic may before very long be called upon to invade the hitherto prohibited thoracic and abdominal aneurismal territories, all reports of cases treated by the older coagulation methods become doubly interesting. Hamilton A. Balance (*Lancet*, October 1, 1904) reports the case of a laborer, forty-four years old, for eighteen months had had a gnawing pain in the front of the chest on the right side. This pain was invariably worse after exertion and had at the time of operation become almost unendurable. Prolonged characteristic cough had practically in conjunction with the pain, obliged the man to give up work. Contrary to the usual belief, that syphilis is an almost invariable accompaniment of this form of aneurism, no such history could be obtained from the patient. On physical examination, the left pupil was larger than the right. The pulse was 64 and synchronous in both wrists. The chest bulged over the third and fourth right costal cartilages. Under medical treatment there was improvement. This, however, shortly disappeared, after the patient had begun to work. Two months later the tumor had almost doubled in size and the point of cardiac impulse was in the sixth space, half an inch outside the nipple line. The respirations were 30 and labored. In view of unendurable pain and of the unprecedented rapid growth of the aneurism, operation was finally decided upon. The skin was anesthetized with eucaine and a fine hollow needle, which just passed No. 9 silver wire, was introduced three inches into the fourth right intercostal space one inch from the border of the sternum. The wire was insulated by being passed through shellac. After the needle had entered the sac, the blood spurted over a foot high. Eight feet of wire were then passed into the sac. It had previously been wound in coiled form around a towel. It was shown experimentally that the wire would coil itself when unreeled from the towel through the needle. It took seven minutes to introduce the wire and there was irrgularity both in the rhythm and in the force of the pulse at the wrist, but the patient made no complaint. A constant current was passed into the sac for forty-five minutes, the end of the wire projecting being connected with the positive pole and an electrode being applied to the thigh. For the first fifteen minutes the current was five volts, 24 milliampères; for the next twenty minutes 10 volts, 42 milliampères. For the last ten minutes five volts, 28 milliampères. When the current was turned off, the end of the wire was pushed through into the sac, the needle withdrawn and the puncture sealed. For a quarter of an hour, the patient was comfortable, but after that he began to feel faint, to sweat profusely and to vomit. The pulse became feeble and irregular and fell from 96 to 50. At the end of the operation there was no diminution in the size of the pulsation of the aneurism. Recovery from this temporary dysgracia was complete and was apparently much aided by strychnine injections. For three weeks the pain remained about as before the operation. Likewise the swelling and tenderness about the sides of the puncture. At the end of the fourth week, however, there was marked diminution in size and morphine was discontinued, the patient being able to get up. Three months from the time of operation, the aneurism was pretty well solidified and all symptoms had abated. The wire in the sac showed very clearly under the X-ray. Three weeks later, however, dyspnea began to be sudden and severe. The respirations were 44. He expectorated blood-stained mucus and general edema developed. The aneurism at this time felt solid. He died on August 11, nearly ten months from the time of operation. The heart was greatly hypertrophied. The sacculated aneurism from the first part of the arch of the aorta was found. It was filled with a white clot in which the silver wire was coiled. Loops of wire also passed as far as the origin of the left common carotid and down to the bottom of the left ventricle. The wire had passed immediately after insertion into the ventricular cavity. The operation certainly prolonged life and prevented the patient from dying from rupture of the sac.

MEDICINE.

Fatal Poisoning Due to Absorption of Nitrobenzol.—A case of considerable interest is reported by W. J. Stone (*Jour. Am. Med. Ass'n*, Oct. 1, 1904) where this agent as an ingredient of shoe polish was absorbed through the skin. The man in question was suddenly seized with a fainting spell, which was succeeded by coma and collapse, with death following about four hours later. An autopsy showed acute desquamative nephritis and hepatitis evidently of a toxic nature. The feet showed marked discoloration. Subsequent inquiry developed the fact that the man had applied a large amount of a shoe polish to the uppers of his shoes and had worn them for several hours before death. Chemical examination of the shoes and the remains of the liquid, revealed the presence in both of large amounts of nitrobenzol. The case reiterates the danger of the promiscuous use of nitrobenzol by manufacturers as a solvent for the anilin dyes, and how more extensive poisoning is prevented among their workmen is a mystery. The case is also of interest as showing how absorption may readily take place through the skin and result in a fatal issue.

Tuberculosis of the Abdominal Lymph-nodes.—Having made an extensive study of this subject, C. F. Painter and W. G. Erving (*Am. Med.*, Sept. 24, 1904) state that the three chief sources of infection are direct extension from adjoining diseased tissues, infection from the blood stream, and infection through the lymphatics. The first is uncommon, the second is not infrequent, but the third is the usual mode. A lymph gland in which a tuberculous focus is present, remains always a source of danger to the rest of the body. The process may extend or remain localized, and it is to complications that in the latter case death is due. These may be, intestinal obstruction, peritonitis, or an outwardly progressing abscess. Among cases with spinal symptoms, mesenteric tuberculosis must be differentiated from Pott's disease, aneurism of the abdominal aorta, cancer, osteoarthritis, osteomyelitis, and other inflammatory diseases around the spine. The treatment of this condition may be considered under three heads, general, mechanical and operative. The first is the most important and includes all the factors which contribute toward the building up of the general system—outdoor life, freedom from labor, extra diet, tonics for the appetite. Even where the spine is not involved, the nearness of the spine to the diseased glands causes irritation and great benefit is secured from the wearing of jackets or spinal supports. Surgically, much the same rules hold good for the treatment of abscesses from broken-down lymph glands, as obtain in the treatment of abscesses from tuberculous bone

lesions. It is very important to prevent them from becoming secondarily infected, and therefore incision should be delayed as long as possible. Aspiration, when they are so situated that this may be done without danger to the viscera, is preferable to open incision. The latter, however, is only possible when strong presumptive evidence exists that the glands are isolated and small in number. But even where the abdomen is filled with a mass of glands, a simple celiotomy may be followed by a great improvement. The authors think that the prognosis is good as compared with that of vertebral tuberculosis in the same class of patients. The most serious features are due to the complications, but much can be done for the patient, according to the extent to which it is possible to provide efficient treatment. Patience and perseverence are also requisite. A series of eight cases is reported in detail.

Pathogenesis of Crisis in Pneumonia.—F. Tchistovitch (*Annales de l'Institut Pasteur,* No. 5) makes a study of the pathogenesis of crisis in fibrous pneumonia. In animals which have suffered from a pulmonary infection, and are on the road to recovery, a leucocytosis, and energetic destruction of diplococci by leucocytes takes place. On the other hand, in fatal infection, much more virulent diplococci are seen, the number of phagocytes in the blood diminishes and phagocytosis does not take place. Repeated experience indicates that crisis of pneumonia cannot be dissociated from the bacteriological property of the fluids of the organism. The blood of a patient suffering from pneumonia during or after the crisis, would not be bactericidal to diplococci of the same disease. Tchistovitch concludes that the blood of a convalescencing patient of pneumonia has not the energetic antitoxic property sometimes supposed. One must admit that phagocytosis is the chief factor in cure of pneumonia. The quantity of alexins in the blood increases during the course of a pneumonia, and reaches its maximum at the moment in which the disease commences the stage of resolution. After this the alexins diminish more or less rapidly. In grave cases with fatal outcome the quantity of alexins does not stand in relation with the total number of leucocytes. In 1887 it was demonstrated that the blood of an acute case of pneumonia, injected under the skin of an animal caused a rise of temperature, but serum from a convalescing case of pneumonia produces no effect.

Cytology of Hydrocele.—In seven cases of chronic hydrocele, Julliard demonstrated a variable number of endothelial cells. Lymphocytes and red corpuscles were sometimes found, but referred to the traumatism of puncture. Liquid from acute gonorrheal hydrocele showed a preponderance of polynuclear elements, but in syphilitic hydrocele, besides endothelial cells, were found lymphocytes, eosinophiles, and polynuclears. Oscar Marchetti (*Gazz. degli Osped.* August 7, 1904) reports observations on 30 cases. In simple hydrocele there were few cellular elements. Usually some epithelial cells were present, and lymphocytes. In hydrocele secondary to tuberculosis he finds a high percentage of epithelial cells—25 to 52 per cent., and 25 per cent. of lymphocytes and eosinophiles or polynuclear cells in smaller amount.

Spontaneous Gangrene.—An accompaniment of hysteria—hysterical blindness and paralysis—is rare, but spontaneous gangrene of the skin as an accompaniment to this series of nervous symptoms is very much less frequently seen. W. A. Mearns (*Lancet,* September 17, 1904) records the history of a patient, aged twenty-four years, who first consulted him for a skin trouble on the lower part of her neck. She was a frail woman and was known to have hysterical tendencies. She had always been irregular in her menstruation, and presented the characteristics which are usually called forth by profound anemia. The appearance of the lesion was in itself not significant. It was simply a dark-red area the size of a ten-cent piece just above the middle third of the right clavicle. The subjective disturbances which had been observed at the time of its appearance were simply a burning sensation over the region. A tentative diagnosis of herpes was made and treatment accordingly instituted. The author did not see her again for a week, at the expiration of which time he was called, her neck having become very much worse. It was already gangrenous, and on raising the surface pus could be detected beneath it. Already a second area had developed, somewhat below the primary one, but this had not yet gone on to degeneration. The pain was intense, and morphine had to be administered. Hot boric acid fomentations were applied to the sloughing area, after which the necrosed tissue separated. By the next day a similar condition was to be observed in the area secondarily involved. The dead parts were not unlike those which would be seen after the application of pure carbolic. Subsequently the lesions extended progressively down to the right breast; in each case the size was about equal to that of the first one, and the cycle traversed was the same. In all seven areas were involved. The area by this time was so large that skin grafting was resorted to, but the grafts twice refused to heal. Throughout the temperature was slightly above normal, registering usually about 99° F. On two occasions, however, extraordinary rises took place without any apparent cause, once to 105° F. and the second time to 110° F. Finally, after nearly five months in the hospital, the patient was discharged with the part healed, but with very extensive and disfiguring cicatrices on the neck and breast.

Local Use of Quinine in Hay Fever.—A form of treatment which has been used with success is recommended by H. D. Fulton (*Jour. Am. Med. Ass'n,* July 30, 1904). It consists of the employment of a saturated solution of quinine sulphate, in sterile water, as a nasal spray, and the application to the mucous membrane of the nares of an ointment consisting of quinine and simple vaselin in the proportion of thirty grains to the ounce the applications being made every four or six hours. Spraying the nares will at once stop all symptoms of coryza, but the effect will soon disappear unless followed by the thorough application of the ointment. Where the bitter taste of the quinine is objected to, euquinine is an equally efficacious substitute.

A New Hypnotic.—The amides of the lower fatty acids have a distinct narcotic action which is enhanced by adding bromine and ethyl radicals to the molecule. G. Fuchs and E. Schultze (*Münch. med. Woch.,* June 21, 1904) have manufactured bromdiethylacetamid synthetically and placed it upon the market under the trade name neuronal. It seems to exceed all other hypnotics in efficacy and is safe and not followed by untoward after-effects. The average dose is one gram, to be followed by hot liquids. The drug also acts as a sedative and may be of some value in epilepsy. Like most of these best yet hypnotics it will require much experience to determine its true position.

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THE THIRD ANNUAL REPORT OF THE HARVARD CANCER COMMISSION.

Four contributions to the discussion as to the etiology of cancer are presented in the report of the Harvard Cancer Committee made this week before the Boston Society of Medical Sciences. As was the case with the report made a year ago, the work has been largely destructive without obvious constructive facts to replace those opposed,—a condition of things none too satisfactory, but which yet must be gratefully accepted until a better knowledge of the chemistry of tissue metabolism shall allow of positive advance. The work accomplished tends, as heretofore, toward a demolition of the parasitic hypotheses.

The elaborate and painstaking researches of R. B. Greenough and of E. H. Nichols seem to be the most important of the year's work reported. Dr. Greenough has continued his study of the cell-inclusions of cancer. These bodies, supposed by some to be protozoan in nature, are found to be in all probability only vacuoles formed within gland cells. Reporting nearly five hundred examinations made by four observers on various sorts of cancerous growths, on sarcomata, and on different sorts of tissue, it was found that these rounded objects, the so-called Plimmer's bodies, are much more common in gland cells than elsewhere, never occurring for example, in epitheliomata, and never, with a single exception, "proving the rule," in sarcomata. Numerous lantern slides made from drawings were adduced to prove that these cell inclusions are secretory in nature, formed by the aggregation of secreted ganules which collect in masses, degenerate, and lead to the formation of vacuoles in the cytoplasm. These vacuoles almost always appear in the body of the cell between the nucleus and the duct-lumen,—the location where secretory products are most apt to be found. The strongly staining solid masses in the interior of these vacuoles remains to be explained somewhat, however, as does the peculiar structure of the periphery of the bodies.

Of fifty-four implantations of tissues made in guinea-pigs and in rabbits by Dr. Nichols none led to the production of cancer, unless the tissue transplanted was cancerous, in which case the form of cancer reproduced was always identical with that of the carcinoma from which the implanted bit of tissue was taken. All sorts of animals, save the very simplest, are now known to have cancers, but the transference from one animal species to another has never been accomplished, and only in rats and mice has the infection of one individual by another by transplantation been proven to be possible. The statistics do not tend to prove a relative increase of cancer, nor its occurrence in localities or certain houses beyond what chance will quite account for. This result corroborates that of the English cancer commission reported last spring, and in general the trend of the work is the same, namely, toward the non-infectiousness and the metabolic nature of this deadly scourge.

W. C. Howe and Robert Vose presented a careful and instructive summary of the observations made at the Massachusetts General Hospital on the effects of Roentgen rays on cancers, especially on those of a superficial location. This paper is distinctly discouraging as concerns the curative effects of this agent on malignant growths of a cancerous nature. In a fair proportion of cases epitheliomata have been apparently cured, but more often than not the effect has been by what is practically cauterization, by a slow burning away in toto of the diseased area; and for this purpose the knife is both more prompt and more certain. In the cases treated up to the limit of commencing tissue-destruction

the therapeutic effect was usually found to be only palliative, recurrence occurring as it would after incomplete removal by the scalpel. Deeply seated cancers appear to be wholly beyond the influence of the rays.

Dr. F. B. Mallory, the recent describer of the protozoan of scarlatina, offered a contribution to the classification of tumors based on the long fibrils found to connect three sorts of cells, namely, neuroglia, unstriated muscles and connective-tissue cells. This report was only preliminary, and in its matter too complex for report editorially.

Altogether the third year's work on cancer in the Harvard Medical School has been negatively productive, but tends, on the whole, to make even yet more obscure the solution to this one of the deepest as it is one of the most vital problems of medicine. It is to be hoped that the further work undertaken, perhaps not by the pathologists, but by the embryologists and physiological chemists, will contribute more than a bar to progress in one direction, namely, some help along the direct road to the goal of the truth, to the vast benefit of suffering man and brute.

SERUM DIAGNOSIS OF CARCINOMA OF THE STOMACH.

Until quite recently it has been tacitly assumed that during the process of precipitation of antibodies the immune serum represented the active, and the immunizing solution the passive reagent. In other words, it was thought that the precipitate which results upon the addition of immune serum to a solution of the immunizing substance was formed at the expense of the latter.

Through the researches of Moll,[1] and, more recently, those of Maragliano,[2] this view has been disproven, and it has been demonstrated quite conclusively that the reaction follows exactly the opposite course. During the process of precipitation accordingly the immune serum plays the passive and the immunizing solution the active rôle.

This fact is of fundamental importance in the application of the reaction in the serum diagnosis of malignant disease, which has of late been repeatedly essayed. Engel and Kullmann, whose work antedates the observations of Moll and Maragliano, and was based upon the older conception of the course of precipitation, thus only arrived at negative results. They found that rabbits that had been immunized with blood-serum of carcinomatous patients or with extracts of carcinomatous tissue, furnished a serum which yielded a precipitate with all albuminous solutions, no matter whether these were derived from carcinomatous or non-carcinomatous individuals. Considering the nature of the immunizing agent, this result was of course to be anticipated, even though the exact cause of the precipitation reaction was not then understood. But granted that the principle of the method were applicable for diagnostic purposes, it would have been necessary, in the light of Moll's and Maragliano's researches, to first precipitate the immune serum with dilute blood-serum from non-carcinomatous individuals, so as to remove all precipitations which were referable to the human serum as such. If then the immune serum were to furnish a precipitate with carcinomatous blood, the reaction might possibly be regarded as specific for carcinoma.

Satisfactory researches in this direction are as yet wanting. Analogous experiments, however, have recently been performed by Maragliano, in which the serum secreted from ulcerating carcinomata of the stomach was used for immunizing purposes. The technical details are the following: A patient with carcinoma of the stomach is placed upon a special diet, as suggested by Salomon (*Deutsche medicinische Wochenschrift*, 1903, No. 31). The stomach is then washed out before retiring. The next morning half a glassful of physiological salt solution is given and the stomach contents procured five minutes later. If this solution contains albumin (as shown by the nitric acid test) it is suitable for examination. To this end rabbits are used and injected twice a week with from 10 to 15 c.c. of the washings, ten or eleven injections being made in all. The resulting immune serum is then treated with small amounts of a 1:50 solution of human blood. A slight precipitate usually develops, which, after standing for several hours in the incubator, is removed by centrifugation. The clear supernatant fluid is drawn off and examined once more with a little normal blood solution, so as to insure the complete absence of normal blood precipitations. Finally, the immune, carcinoma-rabbit blood-serum is treated with the stomach washings to be examined, when, according to Maragliano, a precipitate is formed, if the solution under examination comes from a carcino-

1 Moll, L. Hofmeister's Beitrage, Vol. IV, Heft 12.
2 Maragliano, D. Berlin. klin. Woch., 1904, No. 27.

matous stomach. It does not develop, on the other hand, if the stomach contents are not of a carcinomatous origin.

A detailed account of Maragliano's work has thus far not appeared, but it is manifest from the brief survey which has here been given that we may soon be in possession of a method of diagnosis of gastric carcinoma which will in a sense be specific. Whether or not it will render possible an earlier diagnosis of the disease than can be achieved with the methods which have heretofore been at our disposal, time alone can tell. If so, it will represent one of the most valuable results of modern immunity research.

PNEUMONIA ONCE MORE.

We are entering upon the season of the year when the curve of the death-rate from pneumonia begins one of its sharpest annual inclines and reaches one of its two maxima. There is no doubt that the disease has become one of the most serious that afflicts mankind, and of late years the statistics of its mortality dinned into our ears by many writers, have brought out this fact with incontrovertible certainty. There has even come to be a very general impression that the disease is much more frequent and much more fatal in very recent years than ever before in medical history, and some writers insist that the story of its increasing deadliness can be read very plainly in the municipal statistics of the various boards of health, especially in large cities throughout the United States, and that even since 1900 there is an alarmingly formidable advance easily traceable both in its incidence and fatality.

At the beginning of October the Chicago Board of Health, in its weekly report on the state of Chicago's health, said:

"Pneumonia caused 54.4 per cent. more deaths in 1900 than all the other contagious and infectious diseases combined — including cerebro-spinal fever, erysipelas, diphtheria, influenza, malarial fevers, measles, mumps, puerperal fever, scarlet fever, smallpox, typhoid fever and whooping-cough, the total of which was 2,196. In 1903 it caused 87.7 per cent. more than these diseases combined, the total of which was 2,466 in 1903."

This has its very serious aspect, and yet we doubt if the condition of affairs is quite as appalling as statistics would seem to indicate. It was an irate medical man who, like David in his wrath, said, not that all men are liars, nor that all statistics were lies, but that there were three kinds of lies: plain, ordinary every-day lies, blank lies, and statistics. As a clever medical man has recently put it, figures do not lie, but lies may figure in statistics. There seems no doubt that an analysis of the statistics would greatly reduce the apparent increase in the death-rate from pneumonia. In recent years physicians, especially in large cities, have become much more exact in their declarations in death certificates as to the cause of the deaths of patients. This is especially true for the very young and the old.

In the not very recent past old age figured as a prominent cause of death in statistics, while now it is the terminal pneumonia that the more accurate diagnostician very properly sets down as the cause. In children, pneumonia was not set down as the cause of death in most of the children's diseases, if it came only as the terminal complication of them. This was true also with regard to consumption before so much attention was devoted to it. It is not infrequent now to find that a physician, who has been treating a patient for tuberculosis of the lungs for several years, will state on the death certificate that the direct cause of death was pneumonia, though the indirect cause may be set down as tuberculosis. The physician is usually right in this, for in young persons particularly it is an acute exacerbation of their pneumonic condition that often causes death. Perhaps many of us are also influenced by the fact that a great many of the middle class in our large cities are insured, and their friends would distinctly prefer that the word pulmonary tuberculosis should not be put on the death certificate, and we yield the point and stretch our consciences as far as the word pneumonia.

While the municipal statistics of many large cities would seem to indicate a very great increase in mortality from pneumonia, physicians in active practice for many years insist that this increase has not been brought home to them. Of course this is a vague objection to be urged against exact and carefully collected and scientifically collated figures. At the last meeting of the American Medical Association, however, some forcible opinions of well-known clinicians with regard to this matter were expressed when the question of pneumonia was under discussion. Among conservative Eastern physicians at least, there seemed a consensus of opinion that the scare with regard to the increase of pneumonia was being overdone.

There is, of course, one very decided objection

to the publication of such statistics until they have been absolutely determined to be true, and so are likely to do good rather than harm. Newspapers get hold of these startling figures and use them as sensational scare heads. The result is that many a man, when told that he has pneumonia, practically gives up all hope of recovery at once. In respiratory diseases, more than any other form of affection, courage and confidence on the part of the patient is of prime necessity for hopeful therapeutics and for a favorable prognosis. The widespread publication of the apparently great increase of fatality of pneumonia in recent years is likely to add seriously to the number of fatal cases.

While, then, the new "Captain of the men of death," to quote Prof. Osler's expressive phrase, deserves the most earnest attention in the hope that some method of hindering his fearful ravages may be found, it seems extremely inadvisable to insist on calling public attention to the matter so vividly. Physicians, sanitarians, municipal health authorities and those engaged in questions of hygiene, now know of the fatality as exhibited in statistics, and we may hope for further confirmation of the figures, but until certain factors that enter into the problem have been eliminated by time and patient research, we cannot know the absolute truth in the matter, and until then the sensational publication of the apparent increase seems utterly inadvisable.

ECHOES AND NEWS.

NEW YORK.

Removal of Dr. W. E. Bullard.—Dr. William E. Bullard, formerly of this city, and for the past five winters the Resident Physician at the Colonial Hotel, Nassau, Bahamas, has been offered and has accepted a similar position at Palm Beach, Florida, where he will be after December 23.

City's Lowest Death Rate.—Dr. Thomas F. Darlington, Commissioner of the Health Department, announced at the board meeting last week, that the death rate for the week ending last Saturday was the lowest ever recorded in the history of Greater New York. It was 14.46. The number of deaths was 678, and the basis of estimated population 3,570,012. Dr. Darlington said that, in response to petitions by the hospital patients on North Brother Island, he will make an effort to have a chapel for their use built there.

Dr. Dold Goes to Falkirk.—Dr. Wm. Elliott Dold begs to announce to the medical profession, that he has accepted the position of medical superintendent of Falkirk, Central Valley, Orange County, N. Y.

Honors at Columbia.—Among those of the medical profession to receive honors from Columbia, at her one hundred and fiftieth anniversary celebration, were, Drs. William H. Welch, Andrew James McCosh, Walter B. James, Francis Delafield, Edward G. Janeway, John G. Curtis, William M. Polk, who received the honorary degree of Doctor of Laws, and Drs. M. Allen Starr, L. Emmett Holt, W. S. Halstead and George S. Huntington, who received the degree of D.Sc.

Wood Alcohol Finds.—The Board of Health has found some wood alcohol in whisky, now that the horse has been stolen. They have recently had arrested a saloon-keeper in whose whisky wood alcohol was present, and the trial is now on.

Banquet to Sir Felix Semon.—More than one hundred throat specialists assembled in Delmonico's last Tuesday, at a banquet in honor of Sir Felix Semon, physician extraordinary to King Edward VII, who was a guest of the section of laryngology of the Academy of Medicine. Sir Felix has just returned from a month's hunting in Canada, after delivering an address before the Congress of Arts and Sciences at the World's Fair, in St. Louis. The banquet was presided over by Dr. Harmon Smith, the special committee in charge of the entertainment being composed of Dr. J. W. Gleitsman, Professor W. K. Simpson, Dr. J. E. Newcomb, Dr. Walter E. Chappell and Dr. Emil Mayer. Prominent throat specialists were present from Baltimore, Washington, Philadelphia, Harrisburg, Boston, Springfield, Troy, Utica, Albany and Buffalo. Toasts were responded to by Dr. Harmon Smith, Sir Felix Semon, Andrew H. Smith, Professor George M. Lefferts, Dr. C. C. Rice and others. On Wednesday afternoon Dr. and Mrs. Edward B. Dench gave a luncheon in honor of Sir Felix and Lady Semon, and the same night Sir Felix addressed the profession in the hall of the Academy of Medicine on "Malignant Diseases of the Larynx." Thursday afternoon he delivered a lecture to the Long Island College, and the same evening attended a banquet in his honor given by Dr. George Lefferts. This evening Dr. and Mrs. Emil Mayer will give a dinner in honor of Sir Felix and Lady Semon.

Manhattan Dermatological Society.—Regular monthly meeting of this Society, held on Friday, October 7, 1904, at the residence of Dr. W. S. Gottheil, Dr. I. P. Oberndorfer presiding. The following cases were presented: Dr. J. Sobel presented a female adult patient showing squamous lesions along the hair line (forehead) and postauricular regions, which looked typical of eczema seborrheicum, on the body, arms and legs, dry, white glistening squamous lesions, typical of psoriasis. Not guided by the lesions on the body Dr. Sobel would call this case one of seborrheic eczema, but the typical psoriatic lesions on the body justify the question, Have we here a double eruption to deal with, or might not the case be properly classified under the title of eczema seborrheicum psoriasiforme? Dr. Ochs accepts the latter diagnosis. Dr. Abrahams does not hesitate to say that he recognizes two distinct lesions, psoriasis and eczema seborrheicum. Dr. Gottheil spoke of the differential diagnosis and the difficulty of recognizing clinically, at times, the difference between seborrheic eczema, psoriasis, and eczema seborrheicum psoriasiforme. Dr. Bleiman said that eczema, seborrhea, and psoriasis were closely related, although he thought they were two distinct diseases; either condition may assume the characters of the other, in the course of their development or the result of treatment. Dr. Oberndorfer claims there is such a disease as eczema seborrheicum psoriasiforme. The present case he called a psoriasis with marked seborrheic element.

Dr. B. F. Ochs presented two cases: (1) Leucoderma, in a female patient eighteen years old; condition began when three years old; the patches are symmetrical and seen on face, arms, back, pubic and crural regions; patient is a blonde. (2) A male adult, thirty-four years old; patient states he had a sore on penis ten years ago. Seven months ago noticed a small white patch (resembling a mucous patch) on left dorsum of tongue; antiluetic treatment gave negative results; recently the patch became a distinct ulceration and is now painful and fissured. Large dose of KI internally, and Hg hypodermatically produce no effect. Dr. Oberndorfer looks upon it as a syphiloma; he thought the KI and Hg should be pushed and if after a fair trial with heroic doses no effects were discernible, he would entertain a possible diagnosis of epithelioma. Drs. Gottheil, Sobel and Abrahams agree with the latter speaker; the history was misleading and entitled patient to a thorough course of antisyphilitic treatment, before radical measures were entertained.

Dr. R. Abrahams presented a woman with ulcerations on lower legs, resembling syphilitic lesions; other lesions on the elbows assumed the type of tuberculous ulcers; under KI and Hg, the latter got well but the former are getting worse. The skin over upper third of tibia shows old scars and the tibia shows periosteal nodes. Dr. Abrahams believes he has a double infection to deal with. The majority of the members regard the case as specific.

Dr. W. S. Gottheil showed the following cases: (1) Lupus vulgaris of the face, nose, ears and neck, in a male adult, of sixteen years' duration. Under X-ray treatment for three months gave negative results. The nitrate of silver stick accomplished almost a complete cure; the remaining scar tissue produces traction on lower eyelids and the ears. (2) Leucoderma, in an old man (presented at a previous meeting). (3) Lichen planus ruber in a young man of twenty-one years; eruption began three months ago and is now general all over the body; mucous membranes also involved. (4) Deep gumma involving the muscular tissues of the knee in a young male adult. (5) Male, aged thirty-five years; skin always clear up to three months ago, then noticed small rounded tumors along the calves and later involving regions of the wrists and elbows. Other swellings gradually developed; patient is losing flesh and strength rapidly and looks cachectic; presented as a case of multiple sarcoma of skin. (6) Adult, female; general eruption on body, consisting of macules and papules; mucous membranes clear; eruption itching; patient states that three years ago she had an abscess of the breast after childbirth which took a long time to heal; three months ago the same breast had a "sore," which likewise took some time to heal; the latter was of a different nature and is supposed to have been chancre (?). Dr. Gottheil does not hesitate to call the macular eruption a secondary manifestation of syphilis and the nodular eruption he regards as urticaria. Dr. Abrahams said the case was one of erythema multiforme. Dr. Cocks thought the patient had syphilis; the present lesion being a late secondary eruption. Dr. Ochs regarded it as syphilitic eruption and also pityriasis rosea. Dr. Kinch called it a squamous syphilide and an urticaria. The second breast sore spoken of by patient was possibly the initial lesion. Drs. Sohel, Bleiman and Oberndorfer regard the macular eruption as pityriasis rosea and the papular eruption as possibly syphilis. Dr. Gottheil presented photographs of an interesting case of pemphigus foliaceus and a case of Addison's disease.

PHILADELPHIA.

Health of the City.—Epidemics of throat diseases are threatening the city. Diphtheria and tonsillitis are prevalent to an unusual degree, the former especially. Last week there were 18 deaths due to diphtheria and several schools were closed on account of the disease.

Private Hospitals to be Under Supervision.—In the future the seven private maternity hospitals holding license from the Bureau of Health will be inspected weekly by inspectors attached to the Bureau. Every room and each patient will be visited. This action is one of the results of the recent exposures of malpractice by the coroner's office. Heretofore the inspection has been done in a spasmodic manner only.

University Laboratories Completed.—The new medical laboratories of the University of Pennsylvania are now ready for use throughout. The last of the equipment was made possible by a gift of $7,000 from Provost Harrison.

Railroads and Health Boards.—Dr. Benjamin Lee, Secretary of the State Board of Health, says that if all persons having control of great interests and employing many men were as ready to enforce sanitary laws as are the railroad companies, the work of the Board would be greatly simplified. The managers of railroads are ready to accept suggestions regarding precautions against contagious diseases "following out its suggestion that all matters of sanitation connected with railroads, such as care of buildings, heating, ventilation, lighting, cleansing and disinfecting cars and selection of water supplies, should be under the charge of a medical officer trained in chemistry, bacteriology and general sanitation and hygiene, the State Board has appointed the physician-in-chief of each of the great trunk systems running through this State as a special inspector of the Board, having first assured itself of his thorough competency as a sanitary officer. In addition to this, the State Board has named the majority of the corps of medical assistants as deputy inspectors for their several roads."

The Absorption of Fibrin.—At the meeting of the Pathological Society of Philadelphia on October 27, Dr. Joseph McFarland detailed some experiments made to determine if a solvent for fibrin could be produced by the injection into animals of that material. A large quantity of fibrin was obtained from horses that were bled for antitoxin purposes, washed for forty-eight hours in running water, dried, powdered and suspended in fluid for injection. Rats and guinea-pigs were injected but nearly all died of infection. At the suggestion of Metschnikoff he then employed dogs, with much greater success, so far as death was concerned. Experiments lasting over several months, however, failed to produce in the serum of the injected animals any substance that was solvent for fibrin. Dr. McFarland concludes that no solvent of this type can be produced in animal serum by injecting fibrin.

Contributions to Science of Professor Leidy.—A recent publication of the Smithsonian Institution is "Researches in Helminthology and Parasitology" by Joseph Leidy, M.D., LL.D. The various papers of Professor Leidy on this subject make a book of 248 pages. To the collection it added a bibliography

of his contributions to science consisting of 559 titles. The series has been edited by Joseph Leidy, Jr., M.D., and forms a most valuable collection.

Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $180, will be made on July 14, 1905, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1905. Each essay must be sent without signature, but must be plainly marked with a motto and must be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. The Alvarenga prize for 1904 was not awarded, no essay of sufficient merit, in the judgment of the committee, having been submitted in competition.

CHICAGO.

Memorial Services in Honor of Nathan Smith Davis.—Tribute to the achievements and character of the late Dr. N. S. Davis, head of the Northwestern University Medical School at one time, and for years the leader of medical thought in Chicago, was paid in memorial services held under the auspices of the Chicago Medical Society, in Powers' Theater, Sunday afternoon, October 23. Dr. John B. Murphy, president of the Chicago Medical Society, presided. The church, represented by Bishop John Lancaster Spalding, of Peoria, Illinois, and Bishop S. M. Merrill, of Chicago, joined with the eminent physician's colleagues in eulogy. The principal addresses were delivered by Bishop Spalding and Bishop Merrill. At the memorial services a letter was read from Mr. Henry G. Foreman, President of the Park Commissioners of Chicago, in which it was announced that, on account "of Dr. Davis' services to the City of Chicago, and because of the high esteem in which he was held by the citizens," the South Park Commissioners had named one of the new parks "Davis Square," in honor of Dr. Davis. It is bounded by Forty-fourth Street, Forty-fifth Street, Marshfield and Hermitage avenues, contains a little over ten acres, and in the park field house a tablet will be placed in memory of Dr. Davis.

Appointment of Dr. Türck.—In November, Dr. Raymond Custer Türck, demonstrator of anatomy in the Post-Graduate Medical School, will go to Alma, Mich., as medical director and business manager of the Alma Springs Sanitarium.

Chicago Gynecological Society.—At the annual meeting, recently held, the following officers were elected: President, Dr. J. Clarence Webster; First Vice-President, Dr. Frank T. Andrews; Second Vice-President, Dr. Henry F. Lewis; Secretary, Dr. Palmer Findley; Editor, Dr. Rudolph W. Holmes; Treasurer, Dr. Charles B. Reed; Pathologist, Dr. Gustav Kolischer; and Councillor, Dr. Emil Ries. The report of the Secretary showed that the average attendance had almost trebled during the year.

Credit to be Given Practitioners in Examinations for Years of Practice.—The Illinois State Board of Health, at a meeting held in this city October 22, adopted the following resolution, which was presented by Dr. J. A. Egan, Secretary of the Board: *Resolved*, That the rules of the State Board of Health, adopted July 11, 1899, regarding the character of examinations, are hereby amended as follows: On and after January 1, 1905, the Illinois State Board of Health will accept as an equivalent of a part of the examination required satisfactory evidence of five or more years of reputable practice of medicine and surgery since graduation, and will allow a credit of 5 per cent. on the required average of seventy-five per cent. for each period of five years of such practice on the part of a candidate for a certificate.

Chicago Pediatric Society.—At the October meeting of this society summer diarrheas of children was the topic for discussion. Dr. A. C. Cotton presented a review of the recent literature on the subject, and, among other things, stated that dysentery had been known as far back as the fifth century. The characteristic lesions and repair had been described, showing that autopsies had been made. Endemic, epidemic, and sporadic dysentery had been reported. Almost nothing except the geographical distribution was added until the discovery of the *Amœba coli* or *dysenteriæ* in 1875 by Losch. In an epidemic in Japan, in 1898, in which there were 1,900,000 cases, and a mortality of 25 per cent., the Shiga bacillus was discovered by a Japanese physician. Discoveries followed in other countries. The 1903 report of the Rockefeller Institute for Medical Research in New York being the most available and comprehensive work on the subject just at present, the author extracted from it many points of interest.

Dr. George H. Weaver, bacteriologist of Rush Medical College, spoke on some bacteriological observations in connection with summer diarrhea. He presented charts showing results of cultural work. He said that in 102 cases taken from the sanitarium at Lincoln Park during the last summer 76 were negative and 27 yielded the dysentery bacillus. He touched on the history of the dysentery bacillus and the difficulties in the attempt to differentiate the organism. As the result of experiments, the tendency is now to group instead of individualize—for instance, one group has a certain action on dextrose only—another on lactose only, etc. Flexner founds his classification on the fermentation of dextrin; others have other bases of classification. There are two general groups, the acid or mannite, and the non-acid. Shiga is used as a broad term to cover all the non-acid group. In Constantinople a bacillus was isolated, which produced acid in milk and the characteristic dysentery lesions in cats, but seemed more like colon bacillus. Other investigators have found the characteristic lesion of dysentery caused by different organisms, so that the opinion now in general is that dysentery is a clinical picture and not an entity. Specific agglutination also is losing a good deal of its value. The Widal test has not so special a significance as it did have. The reaction is not specific in dysentery, either, as it gives the reaction fully as well in typhoid fever as in dysentery. Duval and Bassett record agglutination in 42 out of 53 cases of dysentery, and Wolfstein 39 out of 140, but the agglutination was not present until after the antidysenteric serum was administered. Flexner found it in the Rockefeller Institute in 270 out of 412 cases. Antidysenteric serum was used there, but it is not known whether it was used in all these cases. Dunn, in Rotch's clinic, found it in 10 out of 61 cases. They threw out all cases not agglutinated by the antidysenteric serum. If the dysenteric condition does not exist, it is wrong to use the serum. If not needed, it would be a disturbing element and might do harm. In

the 76 negative cases, 27,050 colonies were made. Of the 27 cases showing the dysentery bacillus, 17 gave the bacillus Y. This distinction has not been made in other reports. The true Shiga bacillus was not found at all. The organism produces different action on glucose, maltose and dextrose, and on different culture media, so that its isolation may depend upon conditions. The question is, Which are and which are not dysenteric bacilli? So unlimited numbers of cultures must be examined. Duval examined the milk stools of healthy babies, and found the dysentery bacillus in two cases, both culturally and by agglutination. In a large part of the cases of summer diarrhea, the dysentery bacillus was not found, or only in small numbers. Probably the ordinary cases of summer diarrhea are not due to the dysentery bacillus, but to various bacilli. Epidemics may be due to the dysentery bacillus. In the controls the agglutination occurred in a dilution of 1 to 400 sometimes, but usually in 1 to 200. Blood serum from scarlet fever and convalescing typhoid fever patients both agglutinated in the same dilution as blood serum from the dysentery patient, showing that dysentery is not a specific infection.

Dr. May Michael read a clinical report of the 102 cases examined by Dr. Weaver, giving the age, diet, character of stools, range of temperature, complications and termination of the cases. Mucus and blood were found in all but two of the cases in which the dysentery bacillus was found. The bacillus was not found in any case under six months of age, the largest number being between one and two years of age. The most of the cases were artificially fed. Four in the 27 cases in which the dysentery bacillus were found died, but recovery was the rule. Rickets, pneumonia, bronchitis, marasmus, whooping-cough were the most common complications, but many of the cases were in good physical condition at the outset of the diarrhea. The antidysenteric serum was used in one case, with no result.

Dr. John C. Cook reported 18 cases, in none of which was he able to isolate the dysentery bacilus, and none gave a clinical picture of dysentery. He found in cultures from the throat or stools one or more of the following organisms: Diplococcus, lactic acid pneumococcus, typhoid, sarcina, yeast, a short, thick bacillus, and a long, slender bacillus. The clinical symptoms were varied. There were complications of marasmus, brought on by improper feeding at home, and especially pneumonia. Five died, two of pneumonia, one of typhoid fever, in which the Widal test was positive. Antidysenteric serum was used in one case without result. One case recovered in which the organisms contained in its stool injected into a guinea pig caused its death. Two cases, one the typhoid fever case, and another reported by the nurse as having had two severe hemorrhages from the bowels, showed in culture a pigmenting organism staining the media a red color. The suggestion was advanced that the color in the stool might be due to the action of this organism on the mucus. The stool did not color water as blood does. The bacteriologists working for Dr. Cook, Mr. Gill and Mr. Bain, of Northwestern University Medical School, hoped to name this organism some day. One case that died at post-mortem showed bronchopneumonia, that could not by physical examination, pulse, temperature or respirations, be determined during life. Most of the deaths were due either to pneumonia or toxemia resulting from improper feeding.

Dr. William J. Butler reported ten cases from Cook County Hospital, in all of which the antidysenteric serum was used, without results in any case. All these cases had blood and mucus in the stools, but in only two was the dysentery bacillus found. Clinically, the cases varied, but the stool was usually green, the temperature high, and the pulse and respirations rapid. One case improved while using the serum, but the improvement was thought to be due to the use of calomel and whey rather than to serum. One case on milk and barley water diet showed no change in temperature, pulse or stool for five days under the serum treatment, but improved in every respect when diet was changed to albumin water.

GENERAL.

Another Yellow Fever Expedition.—The Liverpool School of Tropical Medicine intends shortly to send out a second yellow fever expedition to the Amazon, in view of the necessity of investigating still further a malady which continues to claim so many victims. It will be remembered that the late Dr. Walter Myers was selected by the school, together with Dr. Herbert Durham, to undertake an expedition to Para to investigate the fatal disease only a few years ago. Unfortunately, both members of the expedition were attacked by the malady and Dr. Myers succumbed. The expedition will probably start at the end of the year.

Medical Socialism.—The canton of Zürich has carried the activity of the State to a remarkable length. It has decided to levy an annual poll-tax of 86 cents, to be called the Zürich Medical Tax. It will produce $100,000 a year, sufficient to maintain forty or fifty qualified doctors; and in return for paying the tax any inhabitant will be entitled to call in one of these doctors at any moment to claim medical attendance free of charge all the year round. There is no great fear that the precendent will be followed in our own country, writes a correspondent of the *Pall Mall Gazette* of London, until the Zürich experiment has had plenty of time to be tried. The medical profession could, no doubt, be relied upon to oppose any such scheme. It is appalling to think of the burden that is likely to be thrown upon those unhappy forty or fifty Swiss doctors, if the people of Zürich are at all like our own. It is not only among rich people who have little else to do but to imagine themselves dying that panic-stricken desires for the doctor, on the occasion of the slightest ache or discomfort, are common; the domestic servant class are equally prone to this weakness. Unless the State doctors adopt a bearish repulsiveness of manner in self-defence, they will have work enough.

Japan Hospital Service.—The Army General Staff, writes the *Sun*, is to be commended for its decision to dispatch surgeons to the regular army to observe the operations of the field hospital service of the armies now engaged in Manchuria. The particular point open to criticism in this decision lies in the purpose to send only one representative to each army. It would be better to send two, or even more, with which we thoroughly agree. It is remarkable that within so short a time after the close of wars in which such nations as England and the the United States have been engaged, it should be possible for the War Department of this country to state officially "that it has become evident to the General Staff that there has been almost a revolution in field hospital methods as a result of the war as far as it has gone." "We are somewhat disposed to doubt whether this is an exact statement of the case. It seems far more probable, in the case of Japan at least, that the comparative freedom of Japanese camps and moving armies from those epidemics which are the usual attendants of military bodies, and the success of field

surgery in the treatment of wounded men, is due far more to Japanese prevision and preparation than to lessons learned since the outbreak of hostilities. While the treatment of wounds in field hospitals is of unquestionable importance, it is of far less importance than is the prevention and cure of diseases in camp. This is established by the fact that from April until September 30, 1898, the records of the United States Army show 345 deaths in action or from wounds received in action and 2,565 deaths from causes other than bullets or cannon balls. Japan's record in Manchuria is so remarkably unlike this that we shall do exceedingly well to study her methods with great care and give them effect in our own service. The dangers most to be dreaded in war are not those of the battlefield, but those of the camp. If we can learn from Japan, by all means let us take a leaf from her book."

Fourth Pan-American Medical Congress.—The Fourth Pan-American Medical Congress, which will convene in Panama the first week in January next, bids fair to be a most delightful mid-winter trip. The delegates will leave this country by the Atlantic, Pacific and Gulf coasts the last week in December. They will return by the same routes, or will make round trips. The Public Health Association meeting will take place on the following week in Havana, and those desirous of attending both meetings can arrange to do so. There are two routes for the physicians to take from Panama to Havana. The first is by way of Jamaica to Santiago de Cuba by boat and overland by rail to Havana. The second is by water from Panama to Vera Cruz and from there to Havana. The former will probably be the most pleasant trip. From Havana, the return trip can be made directly north to New York by water or via Miami or Tampa, Florida; or New Orleans. The connections and dates of sailing are now being arranged. The Panamanian Government has appropriated $25,000 for the Scientific Session and the entertainment. The Congress will be held from the second to the sixth of January. The afternoons will be devoted to the Scientific Sessions and the mornings and evenings to trips and social functions. So far as can be learned, the programme in Panama will be a reception on the first day, by President Amador of the Panama Republic, and the formal opening session of the Congress the same evening. On the second day, an excursion to the Canal in the morning, meeting of the various sections in the afternoon, and a banquet in the evening; on the third day, an excursion down the bay to Taboga Island, where a Panama breakfast will be served, scientific sessions in the afternoon and a ball in the evening. On the fourth day, an excursion to the U. S. Army barracks in the morning, section meetings in the afternoon and the formal closing session in the evening. On the fifth day, an excursion to the plantation of the United Fruit Company; and in the afternoon of this day, those of the congressists who intend going to Cuba to attend the meeting of the Public Health Association, will sail for Jamaica, while those who intend going by way of Vera Cruz, or returning home by way of New Orleans or New York, will remain until the following Tuesday. The Secretaries of the Sections of the Congress for the United States are: Doctors A. H. Doty, of New York, Hygiene and Quarantine; Judson Daland, of Philadelphia, Medicine; R. Matas, of New Orleans, La., General Surgery; Bert Ellis, of Los Angeles, Cal., Eye; Hudson Makuen, of Philadelphia, Throat; Frederick Jack, of Boston, Mass., Ear; C. H. Hughes, of St. Louis, Mo., Nervous Diseases; Geo. Goodfellow, of San Francisco, Military Surgery; John Ridlon, of Chicago, Orthopedic Surgery; D. W. Montgomery, of San Francisco, Dermatology; C. G. Kerley, of New York, Pediatrics; Noble P. Barnes, of Washington, D. C., Therapeutics; Walter Chase, of Boston, Pathology. Communications form physicians in the United Staes interested in these branches, can be sent directly to these different Secretaries. Delegates intending to attend the Congress, desirous of obtaining information concerning it, should communicate with the Secretary of the International Executive Committee in the United States, Dr. Ramon Guiteras, 75 West Fifty-fifth Street, New York.

Illinois County Regulations.—The following information will undoubtedly be of interest to every member of the medical profession in Illinois. It will certainly be of great value to those who assume the care of indigent patients. Under the law of Illinois, a liability is imposed upon counties to give or cause to be given such assistance as may be necessary to persons falling sick within the county, who are without money or property to pay for such assistance—in short, a county is liable for the necessary expense of medical attendance, nursing, provisions, fuel, etc., of a patient who is unable to provide for himself. It must be remembered, however, that a county is not liable for services rendered by a physician to an indigent patient—except in case of emergency where prompt and immediate action is required—or for supplies furnished to such patient by a physician or any other person, or a municipality, unless express authority to render service or furnish supplies has been given by an authorized county official, the Overseer of the Poor in Alexander, Calhoun, Cass, Edwards, Hardin, Henderson, Johnson, Massac, Menard, Monroe, Morgan, Perry, Polk, Pulaski, Randolph, Scott, Union, Wabash and Williamson counties, or the Supervisor or Overseer of the Poor in other counties, unless, perchance, the authorized county official should neglect or refuse to give or cause to be given to the patient such assistance as may be necessary, after the necessity therefor has been brought to his attention. It seems necessary to lay special stress upon these points, as, during the last few years, physicians have undertaken the care of smallpox patients without authority from the county and have sought in vain for the payment for their services. A few of these physicians had received authority from city and village officials to care for the patients in question. Since the municipal officials had not consulted the county officers in these cases, the county was not liable for the services rendered, and it is very questionable whether action against the city or village would hold. Another point which may be of great importance to the physician who undertakes to "look after" smallpox patients: The expense of enforcing health laws and quarantine regulations always falls upon the city, village or township concerned, and not on the county. In counties not under township organization, the expense falls upon the county in territory outside incorporated cities and villages. A township is not liable for expenses incurred within the corporate limits of a city or village, nor is the city responsible for expenses incurred within the township outside of the corporate limits of the city or village. An additional point which may also be of importance: A county is not liable for the expense of the care,

medical attention and supplies of a patient quarantined in his home, who has sufficient means to procure such care for himself. If a physician attends such a patient, he must look to him for payment for his services.

The Death-rate from Cancer and Appendicitis.—Dr. Tatham, in an analysis of the causes of death in the report of the Registrar-General for 1902, just issued, states that for England and Wales tuberculosis caused 57,396 deaths or 10.5 per cent. of the mortality from all causes; while alcoholism or delirium tremens caused 2,784 deaths. The deaths ascribed to cancer or malignant disease in the year under notice numbered 27,872, and exceeded by 2,384 the average number in the previous ten years corrected for increase of population. Of the above-mentioned deaths 13,540 were attributed to carcinoma, 1,690 to sarcoma, and 12,642 to "cancer" or "malignant disease" simply. Among males the crude rate of cancer mortality was 696 per million living, and was the highest male rate on record; among the other sex it was 985 per million, which had been the rate prevailing in the previous year likewise; this rate also was the highest on record among females. The mortality from malignant disease does not bulk largely in the bills of mortality until somewhere about the thirty-fifth year of life. It is right to mention, however, that at each of the six age-groups of the period under thirty-five years, the registered mortality from malignant disease is also increasing, and that not slowly. After giving a table showing the cancer death rates at all ages above thirty-five years—in England and Wales as a whole, in the urban counties, and in the rural counties—the rates in 1902 being compared with the average rates in the five years immediately preceding, he points out that if the cancer mortality at ages above thirty-five years be judged by the crude death rates the rural counties will appear to suffer much more heavily than the urban, whereas, if the corrected death rates be taken as test, the opposite conclusion follows, for the rural cancer mortality in both sexes is shown to be considerably the lower. But even this adjustment fails to reveal the true relative mortality in populations thus differently circumstanced. Appendicitis was the certified cause of the deaths of 901 males and 584 females—together 1,485, persons, in the year 1902, as compared with 1,244 in the year immediately preceding. Among males the death rate from this disease was equal to 56 per million living and among females to 34 per million, the rates in the previous year having been 47 and 30 per million respectively. Appendicitis was abstracted as a separate cause of death for the first time in 1901, previous to which year the deaths certified as from this cause were classed under the head of enteritis. There is little doubt that in past years many of the deaths registered as from peritonitis were really due to appendicitis. In compiling the tables for the year under present notice 154 deaths were contributed to the total of 1,485 deaths from this disease, as a result of medical inquiry, these 154 deaths having originally certified as from peritonitis.

OBITUARY.

Dr. William Wilson, of Jersey City, N. J., died on Wednesday, Oct. 26, in his seventy-fifth year.

Dr. Eleanor Louise Rundio, South Orange, N. J., died on Monday night at her home, of typhoid fever. She studied medicine in the New York Medical Hospital and College for Women, and graduated from there in 1902, after which she served as a resident physician for one year. She then went to the Lying-in Hospital, New York, and later took a course in the New York Ophthalmic Hospital.

Dr. Mordecai Price, one of the best known surgeons in Philadelphia, was found dead in his office October 29. The evening before he was in his usual health and performed an operation for appendicitis. He was found the next morning lying on the floor grasping his instruments, evidently dying shortly after reaching his office. Dr. Price was sixty years old. His preliminary education was obtained in New York, and he graduated in medicine at the University of Pennsylvania in 1869. For a number of years he has been associated with his brother, Dr. Joseph Price, in their private hospital on Eighteenth street.

Dr. Lewis Royer, of Pottstown, Pa., died of apoplexy October 26, aged eighty-two years. He had been engaged largely in the wholesale drug trade and in other busines affairs.

Dr. Davis G. Hetzell died in West Philadelphia, where he had practised more than forty years, on October 25, aged sixty-eight years. He was graduted from Jefferson Medical College in 1861 and served as surgeon in the Civil War.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, October 22.

AN X-RAY SCARE—THE PROPAGATION OF DEGENERACY—AN EPILEPTIC COLONY—THE PREVENTION OF CRUELTY TO CHILDREN—THE LATE DR. NIELS FINSEN.

In a previous letter reference was made to the sad case of Dr. Blacker, radiographer to St. Thomas' Hospital, who died of a spreading epithelioma of the arm originating, it was believed, in a burn of the finger caused by X-rays. The case was made the more tragic by the fact that Dr. Blacker successfully treated King Edward VII. for a small rodent ulcer of the face while he was himself actually in the clutches of a more terrible disease. The case was kept so secret here that few people know the facts. Recently, however, carefully veiled allusions to it have appeared in some newspapers in connection with sensational reports as to the prevalence of X-ray dermatitis among radiographers. These reports had their origin in a paper read by Dr. Hall-Edwards of the General Hospital, Birmingham, at the annual meeting of the British Medical Association held at Oxford in July. He there gave an account of the condition of his own hands which are covered with warty growths, cracks and ulcers that have resisted all treatment. The warts grow steadily and can be kept down only by rubbing with sandpaper or cutting with a razor. Great pain is experienced, and altogether the outlook is unpromising. Dr. Hall-Edwards states that several medical men have abandoned the use of the X-rays, in consequence of similar mishaps, and in a case of which he has personal knowledge, eighteen months' rest, with constant treatment, has produced but slight improvement. It is not only the hands that suffer. Several constant workers suffer from chronic dermatitis of the feet, which the boots have failed to protect. Dr. Hall-Edwards' paper, appearing as it did almost simultaneously with the news of the death of Edison's assistant, Clarence M. Dally, has, of course, been seized upon by the sensational press which sees in all this the opportunity of a "scare,"

that will fill their columns at this dull season. The flesh of the public is made to creep day after day with headlines, such as "Terrors of the X-Ray," "The X-Ray Peril," "A New and Painful Disease," "London Doctors' Terrible Sufferings," etc. It is stated that nearly all the doctors who are engaged in X-ray work in the London hospitals are suffering from dermatitis. Quite recently, we are told, one doctor, who is in charge of the X-ray department at one of the largest of the London hospitals, had the first two joints of the forefinger of his right hand amputated, and a few days ago it was found necessary to take the remainder of the finger away. To an interviewer the doctor confided that he had suffered the torments of the damned. From June onward, until he had his finger amputated he scarcely knew what sleep was. Night after night he rolled about in agony. "All the earlier workers," proceeded the doctor, "are suffering in greater or less degree; and this is due solely to the fact that we did not know what we were working with, and took no precautionary methods against possible danger." It is certain that X-ray dermatitis more or less severe is fairly common among operators; experience here agrees with what is reported from America. But the newspapers, as is their wont, have exaggerated both the actual mischief and the danger. Doctors engaged in X-ray work have learned the necessity of taking proper precautions, and there one hears but little of dermatitis among the younger men.

It is estimated that there are 50,000 epileptic children in the United Kingdom, and that one child in every 100 of population is feeble-minded. During the last few years special schools have been established in which such children are trained till they are sixteen. Then they are thrown on the world where they are left to shift for themselves. Most of them drift into imbecility, vice and crime, and flood the workhouses and prisons. They are thus a grievous burden to the community. By way of remedy it has been suggested that some public authority should be empowered to detain feeble-minded persons incapable of looking after themselves and place them in what may be called colonies of refuge, where they will be safe from temptation and where in particular they will not be allowed to propagate degeneracy. A conference of representatives of the National Association for the Feeble-Minded and the National Union of Special Schools was held on October 13 and 14, to discuss the steps to be taken to give effect to this proposal. A striking instance of the danger of allowing mentally defective children to be at large was given by Mrs. Burgwin, a lady who has taken a leading part in organizing special schools for such children in London. She said she knew in one district a family of seven children of whom three were physically defective, two mentally defective, one very bright and promising, and one apparently all right. The latter was a little boy, very alert, ready and fluent in expression. But his school teacher knew him to be mean and cunning. In the playground he was always pinching smaller children. It was impossible, however, to get him certified for detention, and one day the bright child of the family, aged four, was found drowned, and they felt morally certain that the cunning child had drowned her. But there was no proof, and he was set free. Every one sympathized with him. Two months later he took another child into an empty house, and, but for a passer-by, would have undoubtedly killed him. The boy is now confined as a criminal lunatic, but he ought, said Mrs. Burgwin, to be taken charge of as a mentally defective child. Feeble-minded children may, according to her, be divided into three classes: (1) Those who, after training, can return to elementary schools. (2) Those who remain in the special schools until sixteen. (3) Those who after trial are found to be non-educable. She urged that the third class should be certified and sent to permanent working colonies, but on no account allowed to be at liberty. If they were, the result would be that the public would have to keep not only them but their progeny. Terrible facts with regard to feeble-minded and defective women were given by Dr. Potts, of Birmingham. He paid a visit to a girls' night shelter, and investigated the first twelve cases he found there. The following is the record: 1. Consumptive, both parents died of the disease. 2. Neurotic drunkard, with a family who had suffered from St. Vitus' dance. 3. Normal. 4. Deaf and mentally defective. 5. Neurotic and mentally defective. 6. No congenital defect, but health ruined by drink. 7 and 8. Feeble character. 9. Suffering from persistent bad memory. 10. Twice imprisoned for theft; daughter of drunken loafer. 11. Normal. 12. Mentally defective and suffering from heart disease. Thus, out of twelve only two were normal individuals. Yet the ten were free to go as they liked, and to bring up defective children. "It is well known," said Dr. Potts, "that a large number of the inmates of penitentiaries are feeble-minded women." The cost of keeping such persons in colonies would be high, but small compared with the ultimate cost of keeping them and their progeny. In Birmingham he knew a feeble-minded woman selling matches who had nine times been in the maternity wards of the workhouse. Surely that was a disgrace to our legislation. The Magdalene homes, said Dr. Potts, are filled with girls in their teens, and out of ninety-seven cases he investigated he found 37 per cent. were mentally deficient. Yet there was no power to keep them out of the streets. The causes of mental defects Dr. Potts gave as: 1. Defective nutrition in early years of life. 2. Hereditary tendency to consumption. 3. Descent from insane or criminal stock. 4. Chronic alcoholism of one or both parents. "Is there any one who has inquired into the family history of inmates of prisons or reformatories who thinks," asked Dr. Potts, "that so long as the expenditure on drink in this country reaches the appalling total of £180,000,000 per annum, we shall free ourselves of this terrible incubus of criminals, epileptics, lunatics, neurotics, feeble-minded and defective persons?" A resolution was passed advocating that the optional law giving education authorities the power to open special schools for defective children should be made compulsory. Sir Robert Anderson, who, as a high police official, has had a large experience of defectives, complained that there was a false idea of liberty abroad with regard to such persons. "So long," he said, "as they keep their hands off our throats and out of our pockets, it is held that they ought to be at liberty to do as they like. That is a mistake. I would define liberty as 'the divine right of every man to do what he ought to do.'" "Why," he said, "does nature eliminate the unfit? To protect the community. Therefore, if we prevent the elimination of the unfit by training them we ought to protect not only them, but the community, by looking after them. To accord to the feeble-minded

all the rights of the citizen is the part of quasi-philanthropic lunacy. Is it not monstrous that there should be no restriction of the marriage of these feeble-minded people? The sham philanthropists have expended all their little stock of pity upon these poor objects, but they have no pity upon those they bring into the world. I have been represented as one of the most hard-hearted members of the community, but I say emphatically, our duty is to protect these feeble-minded people from themselves." Sir Robert Anderson went on to urge that the care of the feeble-minded should be raised into a national question, and that public opinion should be educated to accept a national scheme for the detention of such persons. A resolution in that sense was passed unanimously.

A good example of what can be done for the care of epileptics is afforded by the colony founded and maintained by the National Society for the Employment of Epileptics at the village of Chalfont St. Peter, in the county of Buckingham. In the homes there established some 200 epileptics enjoy the advantages of a regular life passed in healthy surroundings. Since the establishment of the colony in 1894 several homes have been added, but the accommodation has always been inadequate to meet the ever-increasing applications for admission. During the last year an administration house has been built at a cost of $25,000, contributed by a well-known philanthropist, Mr. Passmore Edwards. The new buildings were formally opened on October 20. Among those present were the King's physician, Sir William Broadbent, and Dr. Thomas Buzzard, the distinguished neurologist. Lord Rothschild paid a well-deserved tribute to the excellence of the work done by the National Society for the Employment of Epileptics.

On October 1 there came into operation a new act for the prevention of Cruelty to Children. Among the novel points in the act is a provision that any person having the custody of a child under sixteen years of age, who shall wilfully ill-treat, neglect, abandon, or expose such child in a manner likely to cause unnecessary suffering or injury to its health, shall be liable, on conviction, to a fine not exceeding $2,500, or imprisonment with hard labor up to two years. Further it is enacted that upon the trial of any person for the manslaughter of a child of which he has had the custody, the jury may find the person guilty of "an offence of cruelty." Further, if it is proved that a person indicted for an "offence of cruelty" is interested in money payable in the event of the child's death, and had knowledge that such money would thus become payable, the fine may be doubled and the alternative punishment increased to five years' penal servitude. It is forbidden, save in certain exceptional cases, to cause any child to be in any street or premises for the purpose of begging, or in any premises licensed to sell intoxicants for the purpose of singing, playing, performing, or selling between 9 P.M. and 6 A.M. Moreover, no person may cause any child under sixteen to be in any place for the purpose of being trained as an acrobat, contortionist, or circus performer, or for any other dangerous performance. In the 1896 act, this prohibition did not extend to parents who themselves trained the child. This exemption no longer exists.

Mr. Malcolm Morris, the real pioneer of the light treatment in this country, has been asked by the committee formed in Denmark for the erection of a monument to the memory of Niels Finsen, to cooperate with them by heading a British committee for the same purpose. Although there is much difference of opinion among physicians here as to the value of the light treatment, the movement will probably find considerable support, as it is sure to have the approval of the Queen, who is known to be a great admirer of her deceased countryman. Our people are in regard to royalty like the virgins who follow the lamb withersoever he goeth. Finsen, however, though he can scarcely be called a great man, deserves a monument for his devotion to work under the most discouraging circumstances.

URGENT ADENECTOMY.

To the Editor of the MEDICAL NEWS:

DEAR SIR: In the issue of the MEDICAL NEWS, October 15, 1904, Dr. H. Jarecki reports a case of urgent adenectomy during the progress of a pneumonia. Though the operator is to be congratulated upon his success, the method employed is extremely radical and open to a serious objection.

It must be conceded, and the point is appreciated by the author in the article referred to, that the removal of adenoids during the course of an inflammatory process in the bronchi or lungs is a hazardous procedure in any case, especially in an infant. Particularly so in view of the fact, that the object to be attained, viz., to give the patient nasal breathing, can be secured by a simpler and less dangerous method, one that can be employed by the attending physician.

Under ordinary circumstances, a moderate degree of obstruction due to adenoids can be relieved by instilling a mild warm alkaline solution into the anterior nose, or the normal salt solution may be used. A few drops of warm castor oil, vaseline or alboline will answer the same purpose.

Pneumonia is a frequent occurrence in infants and children with adenoids. The simple suggestions just offered, have been used with good results in numerous cases.

If the obstruction, however, is of a high grade, as was the case in Dr. Jarecki's patient, the plan referred to below may be tried.

Some years ago Dr. Goodwillie advocated the use of hard rubber tubes (nasal intubation) to relieve nasal obstruction. Others have modified the tubes, or rather, in their place, have advised and used drainage tubing of the proper length and caliber. A portion of a soft rubber catheter (Jacques or Nelaton) will answer as well, and is preferable as its surface is better finished. Properly lubricated, it can be easily passed along the flow of the nasal passages, as in nasal feeding, until the posterior pharynx is reached, the portion at the anterior nares is secured by means of a small safety pin, and the rest cut off. It may be done on one or both sides, or a tube may be kept in for a short time in one nostril and then changed to the other. It is surpising how readily relief is afforded. It may not be necessary to keep the tube *in situ* more than a few hours. Sometimes it can be used for days, taken out morning and evening to be cleaned. The recommendations are not theoretical. The writer has resorted to the plan (introducing catheter) in infants with lateral pharyngeal abscess and adenitis of Henle's glands, also in cases of infectious diseases complicated with nasopharyngeal exudation of false membrane and secondary cervical adenitis, etc. The method is simple,

it does not deserve to be termed an operation, is without danger, can be employed by the physician or trained nurse, and secures prompt relief. Furthermore, there is no large raw surface left, which (in an infant or young child whose vital powers have been lowered by the pneumonia poison) might easily permit the entrance of pathogenic germs and give rise to serious septic symptoms.

In the above remarks there is no intention to cast any reflection upon the management of the case. The operation was a brilliant success, moreover, the patient recovered. The object of this communication is merely to direct attention to a simple procedure, whereby a fair amount of nasal breathing can be secured without any dangerous operative measure. Of course it is understood, in such patients, the nasopharynx ought to be cleaned out subsequently. Such an experience as the one detailed above is a strong argument in favor of an early removal of lymphoid hypertrophies giving rise to obstructive symptoms. The operation should be done before the advent of dangerous catarrhal symptoms involving the bronchi or lungs. F. HUBER, M.D.

October 18, 1904.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-first Annual Meeting, held at the Academy of Medicine, New York City, October 17, 18, 19 and 20, 1904.

THIRD DAY—WEDNESDAY, OCTOBER 19.

(Continued from Page 861.)

Original Dose of Antitoxin.—Dr. L. C. Ager, of Brooklyn, presented a sample of the original dose of antitoxin, as it was sent to this country when the serum was first introduced. The dose was about one-half of one c.c., and as the serum was very low in antitoxic quality, it can readily be understood how weak the remedy was. Now it is understood that the dose should be large. The American Pediatric Society decided some time ago that 2,000 units should be the beginning dose. This was a mistake. Dr. Ager thinks that at least 3,000 units should be used and many of the failures that are blamed on antitoxin are really due to too timorous use of the remedy. Dr. Ager considered that the only prejudice against antitoxin is with regard to its supposed liability to produce paralysis. This is due to some wild newspaper statements, and is unsupported by any evidence. He is glad to notice that Dr. Kerley advises the injection of the serum into the abdominal wall. The Health Department suggests its injection into the soft tissues of the back. This is almost sure to invite discomfort, at least, and may be the source of even suppurative condition with the child lying on its back. Personally he considers that injections into the mammary region in children are best, because there is least likelihood of sequelæ.

Infrequency of Intubation.—Dr. Francis Quinlan, of New York, said that before the introduction of antitoxin, he had to do many intubations, and tracheotomies. In one year he did 116 intubations. Now the necessity for this is very rare. The entire use of antitoxin did away with the necessity for the practice. Antitoxin is a physiological remedy that exactly meets the indication. It is the only one in the whole range of medicine. It seems too bad that there should be any opposition to it, yet there still remain some physicians who do not favor its use.

Appearance of Membrane.—Dr. Louis Fischer, of New York, said that a large dose of antitoxin should be given at once when the disease was recognized, and then the appearance of the membrane, together with the temperature and pulse, must be the guide to repetitions of the remedy. Not less than 5,000 to 10,000 units should be given as an initial dose. This is the custom at the Willard Parker Hospital. It should be given until its effect is produced. As soon as the membrane assumes a granular appearance and begins to disintegrate, the victory has been won. Nasal diphtheria is quite as bad as laryngeal diphtheria, and the initial dose should be at least 10,000 units repeated if necessary. Antitoxin must not be relied on alone, however, but the children must be fed freely so as to improve their nutrition and increase their resistive power. The antitoxin does not kill the Klebs-Löffler bacillus and has no effect on it. The resistive vitality of the tissues must be aroused to oppose further invasion. The bowels should be stimulated and the kidneys and the other emunctories, and the little patient should be kept in perfectly fresh air, as far as possible.

Opposition to Antitoxin.—Dr. Jas. J. Walsh, of New York, said that a certain amount of opposition to antitoxin still existed in spite of all that had been accomplished. It is found much more among the educated classes, especially newspaper men and literary workers. It is evidently due to the fact that the antis know how to get into print with their effusions. The antivivisectionists are also as a rule rabidly opposed to the use of serum therapy, because they fear the torture of the animals in its preparation. They discredit all the favorable reports and in their journals in this country and England keep repeating the story of any deaths that have taken place during the use of antitoxin and attribute all postdiphtheric palsy and nephritis to its use. By realizing the exact location of opposition more can be accomplished in meeting it. The antivivisectionist crusade against antitoxin is doing more to hurt their cause than anything else because mothers learn the value of it after use in the family and the philanthropically inclined see its benefits in hospitals. These points should be insisted on by family physicians who are interested in the progress of serum therapy and the defeat of the antivivisectionist movement as regards its extreme features.

Spraying the Throat.—Dr. Kerley said, in closing the discussion, that free spraying of the throat with diluted hydrogen peroxide seemed to be the best method of getting rid of the bacilli, which remained after the clinical symptoms of diphtheria had disappeared. During the progress of the disease, such spraying does not seem to be of special benefit, but in a convalescent period it should always be employed. To his mind the important principle with regard to the use of the antitoxin, is that not the diphtheria in general must be treated, but the individual patient and the conditions that are found in the individual case. The tendency should rather be toward large than small doses.

Radical Cure of Hernia in Children.—Dr. William B. Coley, of New York, reported the results obtained by Dr. William T. Bull and himself in 1,400 operations for the radical cure of hernia in children, performed at the New York Hospital for Ruptured and Crippled from 1891 to 1904, altogether 49,000 cases of hernia were under observation. Of these 47,000 were inguinal hernia. 4,000 cases of hernia oc-

curred in patients under fifteen years of age. Of these about 1,400 were operated. The others were treated by means of trusses and other means. Most of the cases operated on were very large hernias in whom trusses had been tried and failed or in whom there was a frequent tendency for the hernia to descend in spite of the truss. As a rule trusses were worn for one to two years before the operation was done.

Age for Hernia Operation.—Under four years of age, the radical cure of hernia by operation does not seem advisable. Young children frequently are cured of their hernia by the use of a truss or by other simple means. After this age, the use of the operation becomes more and more advisable, especially in the dispensary service, where proper care cannot be taken of such cases at home. One thing seems of special interest, viz., that there are many relapses after the cure of hernia by means of truss. In adults it is not an infrequent story that they suffered from hernia as children, which was cured, and then later on the relapse. Some surgeons advise operation even in infants, but the truss is better. Congenital hernia is probably never cured by means of the truss. In cases operated by the Bassini method not a single relapse has occurred, though the cases have been traced for from two to eight years. In inguinal hernia in female children, the round ligament is sometimes allowed to remain in its usual location, yet the absence of relapses shows that the cord transplantation, considered so important in the male, is not always absolutely essential. Of course, the cord in children is smaller than in adults, and the round ligament is usually very small, so that this has its influence. In adults it seems advisable always to follow the Bassini method completely. None of the veins of the cord are ever excised. The lessening of the diameter of the cord may be necessary in the Halstead method of radical cure, but not in the Bassini. At times the excision of the vein is followed by atrophy of the testicle, an extremely undesirable sequela. The tissues are brought together by means of kangaroo tendon, as introduced by Dr. Marcy, of Boston. This keeps the tissues firmly together until union takes place, and then is well absorbed. Whenever the appendix is found to be adherent to the sac, it is removed. It is never specially looked for, however. Some relapses took place in cases of sliding cecal hernia in which there was no proper neck of the sac to tie. Four deaths took place in 1,460 cases. In the first double pneumonia carried off the patient on the fourth day. In the second at autopsy, a septic condition was found after a long and serious operation requiring considerable handling of tissues in the days before the introduction of rubber gloves. In the third cases there was very serious complicating Pott's disease, and the patient died of acute pericarditis on the eighth day. This case would not now be considered suitable for operation. The fourth death took place after an operation performed by an assistant surgeon who was not so familiar with the technic of the radical operation, and the operation took more than an hour and a half. This delay gave occasion for air infection, while the bruising of the tissues during the lengthy manipulations reduced the resistive vitality.

Suture Material.—Undoubtedly the kangaroo tendon is the best. The asepticity of ligatures used to be considered the only quality worth thinking of. As McEwen remarked at the last meeting of the British Medical Association, this is only one of the qualities of ligatures, and not the most important. The ligature material must hold long enough to bring about union of tissues and then should be rapidly eliminated. Wire sutures are eminently inadvisable. In some cases where they have been used, subsequent strangulation has been found to occur in a loop of th wire. In the 1,460 cases operated upon, there were six relapses. Four out of the five of these occurred in patients in whom the cord had not been transplanted. They were done before the day of the Bassini operation. In the sixth failure, the case was one of sliding hernia. Most of the relapses take place during the first six months. Ninety per cent. of them during the first year, which is also the experience of other operators. In 600 cases, operated upon in patients between the ages of one and twelve years, there has been no relapse.

Dr. Wiggins said that kangaroo tendon is undoubtedly a most valuable suture material. He has recently had a severe test case in which to try it. A woman who was three and a half months pregnant had to have a laparotomy performed. The pregnancy was not interrupted and the avoidance of a hernia seemed almost impossible. Kangaroo tendon was employed, however, for the suture material, and the wound healed in excellent shape, and the pregnancy went on to its full term without any complications and without any sign of yielding on the part of the abdominal scar.

Dr. De Garmo said that in his experience radical cures for hernia in children had better be delayed until the patients are over four years of age. He has done 1,162 operations, 220 of them in children, and has had no relapses in children. In children undoubtedly hernia can sometimes be cured by means of the truss. In hernia in male adults, it is sometimes advisable to remove some of the vein so as to make the cord of less size.

Dr. Coley said, in closing the discussion, that after the truss has been given a fair trial, operation for the radical cure of hernia should not be delayed too long. Congenital hernias are apparently not cured by the use of the truss. In those that are cured, relapses sometimes take place, certainly much more readily than after radical operation. It is better then to operate as soon as it is decided that the truss will not prove curative.

Infant Mortality in New York City.—Dr. Lewis C. Ager, of Brooklyn, discussed the infant mortality statistics of Greater New York, remarking, as an introduction, that while figures cannot lie, lies can and do figure in statistics on many occasions. Of the 21,000 deaths in New York City during the past year, over one-fifth were in persons under one year of age, and nearly one-third were under five years of age. Most of the deaths among young children were from diarrhea, and the majority of them took place during July and August. While the general death rate has been constantly increasing, the mortality rate has not always corresponded to this increase among children. In 1902 there were 3,200 deaths; in 1903, 2,755 deaths, while in the summer just past, there were 3,800 deaths. The improvement that has come in the death rate must be attributed to the inspection of tenement houses and the milk supply and to the work of the Milk Commission. The best work can be done in educating the people to a knowledge of the important factors in infant healing.

Comparative Infant Mortality, Brooklyn and New York.—Up to 1891, the mortality rate favored Brooklyn. Since that time it has been against Brooklyn, and more deaths have taken place in proportion to the population than in Manhattan. What seems a curious paradox is to be found in the statistics of deaths from diarrheal diseases in the component parts of Greater New York. During the period when 170 deaths were reported in New York County, there were 209 in Kings

County, 216 in Queens County and 228 in Richmond County. This is exactly the opposite of what would be expected since overcrowding of population is supposed to be a factor in diarrheal diseases. The infant mortality in Brooklyn is worse than in New York, and this is due to the fact that condensed milk is used much more frequently in Brooklyn than in New York. In 250 infants deaths carefully traced in Brooklyn, about 60 per cent. of the little patients had been fed on condensed milk. Among the same number in Manhattan only 27 per cent. were fed in this way. Children fed on condensed milk, even when not actually ill, lose their resistive vitality. Another factor in the increased infant mortality in Brooklyn lies in the circumstance that here is practicaly no disposition of free ice among the poorer classes across the river and philanthropy has done very little to supply them with Pasteurized or otherwise sterilized milk.

Prostatectomy in Emergency.—Dr. John F. Erdmann, of New York, said that in all emergency drainage of the bladder in old patients, he preferred to do a prostatectomy and drain through the perineum. Formerly such drainage was apt to be suprapubic, and there were many accidents that might take place. Such drainage is contra-indicative only in extensive malignant disease of the prostate with great enlargement. The dangers of the perineal operation are not near so great as the suprapubic method. There is never the profound sepsis that occurs by the former method. Patients do not have to lie down, but may sit up not long after the operation, and may even walk about on the fifth day. The pressure while sitting up brings the edges of the operation wound together and aids recovery.

Dr. R. H. M. Dawbarn, in discussing Dr. Erdmann's paper, said that emergency prostatectomy with drainage through the perineum was a very valuable surgical procedure. It has a better technic than the older method and gets directly at the condition. The after-results are uniformly better.

Oxygen and Chloroform in Anesthesia.—Dr. James Taylor Gwathmey, of New York, discussed the value of oxygen in combination with the different anesthetics in common use. In his recent experience oxygen with chloroform has given specially good results, so much so that he considers it deserving of special investigation by a commiteee. He was enthusiastic as regards its freedom from danger, from complications and inconveniences of all kinds. At his suggestion, it was directed that the president appoint a committee to investigate further this imporant subject.

The Heart in Scarlet Fever.—Dr. Louis Fischer, of New York, read a paper on scarlet fever with remarks on the temperature as a guide in estimating the prognosis and the development of complications. He said that while the temperature is usually considered an infallible sign of the patient's condition in scarlet fever, it cannot always be depended on. Malignant scarlet fever may occur with apparently no temperature. Mild scarlatina with a temperature of 103° to 104° F. is not unusual. Very high temperature is not absolutely unfavorable. Fever alone is not the indication of the disease. The same thing is true in other children's affections. Dr. Fischer has seen empyema with a normal temperature. Other suppurative conditions may exist for days without causing serious disturbance of the temperature current. Hence the inadvisability of depending absolutely on the temperature. At times the toxins of the disease seem to inhibit the thermic centers, and there is very little disturbance of temperature.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirtieth Annual Meeting, held at Cincinnati, Ohio, October 11, 12 and 13, 1904.

(Continued from Page 864.)

The Mamma: Its Physiological Purposes.—Dr. Thomas H. Manley, of New York, discussed the coarse and finer anatomical elements of the mamma in their bearing on some of its pathological affections. He drew the following conclusions: (1) The mamma is a highly organized and structurally a most complex organ. (2) Its functions are manifold. It is an essential and integral part of the generative system. Intermittent in function, like the testes, total ablation, like double castration, makes its impress on the sensorium. (3) Very frequently degenerative or pathological changes begin in a single isolated lobe, about twenty of which are in each breast. In all non-malignant affections, radical measures should be limited as far as possible to the affected area or lobe. (4) It is only in malignant disease of a progressive type and life is imperiled that total sacrifice of the breast is justifiable. (5) Inasmuch as the functions and purposes of the axillary lymph ganglia are yet imperfectly understood, and their removal, quite invariably enhances the risks of operation involves a wide mutilation of the chest walls, and always leaves more or less impediment in shoulder action, or even at times a painful tumefied limb, it is only as an extreme and exceptional measure that their complete extirpation should be practised.

Intestinal Surgery, with Remarks on Technic.—Dr. John Young Brown, of St. Louis, said there was a class of abdominal cases which might justly be considered acute, for the reason that the indications for immediate surgery were mandatory, and in which the mortality largely depended upon the time of operation and the technic of the work. He discussed, first, penetrating gunshot and stab wounds of the abdomen; second, severe abdominal contusions associated with rupture of intestines or other visceral injuries; third, strangulated hernia, confining himself as nearly as possible to a consideration of the operative technic, citing cases in point.

Gastro-enterostomy.—Dr. William H. Wathen, of Louisville, Ky., in this paper described all the pathological conditions indicating the necessity for stomach drainage by the several methods that had been practised for this purpose. He said pyloric divulsion had proven unsatisfactory, seldom gave permanent results, and sometimes committed a traumatism that increased the trouble. Pyloroplasty and its modifications had given better results, but the operation was seldom indicated and was practically obsolete. Gastroduodenostomy, and especially the modification by Finney, was theortically ideal, and in properly selected cases gave excellent results, but it was often impractical because of adhesions or tumors, and could not be generally adopted; its simplicity could not recommend it, because gastroenterostomy might be performed as easily, as quickly, and with a mortality as low, and was applicable in nearly all cases. Wölfler's anterior anastomosis and von Hacker's posterior anastomosis with their modifications were the two methods generally adopted, but Roux's method of cutting the intestine across, implanted the distal end into the stomach, and the proximal end into the side of the distal end was theoretically ideal, and avoided regurgitant

vomiting, but it was difficult and prolonged, and if universally accepted would have a mortality that would be prohibitory. Gastro-enterostomy by the surface to surface anastomosis of the stomach and the jejunum was applicable to the greatest number of cases, and might be performed in nearly any condition requiring stomach drainage. Anterior gastro-enterostomy as an operation of election must very soon become obsolete, and would finally be accepted only where an operation was necessary to give temporary relief, or where the posterior operation was contra-indicated, because of adhesions and the feeble condition of the patient that demanded a quick operation. The ideal operation of election must eliminate the intestinal loop, and this might be done by the posterior method, by attaching the jejunum very near its origin under the transverse meso-colon; the bowel incision might then be made longitudinally or transversely, but was usually made in a longitudinal direction, Kocher and Mikulicz making transverse incision. This method was preferable if the opening into the bowel could be made large enough to permit of continued unimpeded drainage, but the anastomosis was more difficult than in the longitudinal bowel incision. Posterior gastro-enterostomy was now the accepted method with Robson, Mikulicz, Kocher, Czerny, Moynihan and Mayo, with no higher mortality than the anterior method, with nearly an absence of regurgitant vomiting and other immediate complications, and with ultimate excellent results in drainage, the gastrojejunic opening seldom contracting enough to induce pathological condition. The McGraw ligature in the anterior method gave good immediate results, but we could not judge correctly of the ultimate results in the patency of the gastrojejunic opening, and the ligature had probably not been tested in the posterior method. The Murphy button had the advantage of being quickly applied, but except in selected cases possessed no advantages over the suture, and was more frequently followed by complications.

The Indications and Limitations of Various Operations on the Gall-Bladder.—Dr. Charles A. L. Reed, of Cincinnati, Ohio, reviewed the various operations usually performed for the relief of surgical conditions of the gall-tract, summarizing them under the heads of cholecystotomy, cholecystectomy, cholecystenterostomy, and choledochotomy. He recounted his experiences during the last fifteen years, first with cholecystotomy, and cited cases to show that operation had distinct limitations, and urged that it ought not to be done in cases in which prolonged drainage was required, or in which there was a demonstrable permanent obstruction in the common duct, or in cases in which there was reason to suppose that such obstruction might develop. He insisted that the gall-bladder exercised functions of importance in the human economy, and that consequently it ought not to be removed without adequate cause. He recognized as legitimate indications for cholecystectomy conditions of atrophy and malignant degeneration of the gall-bladder and cases in which benign neoplasms caused practical obstruction of that viscus; but insisted that the operation ought never to be done when the gall-bladder could be restored to functional integrity with safety to the life and health of the patient. He urged that cholecystenterostomy should be considered the operation of choice in all cases in which the gall-bladder and a desirable segment of the intestinal tract, preferably the duodenum, the ileum, or the jejunum, in the order mentioned, should be approximated, and in which drainage was demanded for accumulations within the gall-bladder of whatever character; for occlusion of the common duct or following operations upon it; for cholecystitis in which the gall-bladder could be safely left *in situ*, and in all chronic fistulæ of the gall-bladder. It ought, also, to be employed to complete an anastomosis in cases in which nature had atempted to accomplish the task by the formation of firm adhesions between the gall-bladder and the intestines.

Ectopic Pregnancy.—Dr. F. F. Lawrence, of Columbus, Ohio, reported cases of ectopic pregnancy. In ectopic pregnancy the death-rate should be lower than in appendicitis, providing the surgeon got the cases before rupture. The diagnosis of tubal pregnancy before rupture should be made with as much or greater certainty than could a normal pregnancy before the third month. The fact that a tubal pregnancy was allowed to go on to rupture was a reproach to obstetric practice, first, because of indifference or carelessness which prevented proper investigation of the case early. This might be on the part of the patient or physician, but the real fault lay in the indifference to obstetrics which had permitted women to look upon pregnancy as a simple matter, and not one demanding the attention of skilled service except in complicated labors. In unruptured cases the tube could be more safely removed through abdominal incision. In ruptured cases he was convinced that it was often very unwise to attempt to remove a patient to a hospital. The chances of infection in her home could be more readily overcome than the danger of increasing hemorrhage by handling. In all cases of extrauterine pregnancy, tubal disease, which was bilateral, seemed well established. The danger of a catastrophe in case the unaffected tube was left was therefore great, unless that tube be safely obliterated. Absorbable ligature was not a safe material to use for obliteration. Silk of large size only should be used. The better practice was to remove both tubes, retaining the ovary, if possible.

Etiology of Ectopic Gestation.—Dr. H. B. R. McCall, of Kansas City, Mo., read a paper on this subject, in which he discussed the genealogy of ectopic gestation relative to evolution. He submitted classifications, reported cases, and made a plea for early diagnosis, and operation, with special reference to etiology and diagnosis.

Brain Abscess of Otitic Origin.—Dr. George F. Keiper, of Lafayette, Ind., reported cases of brain abscess of otitic origin, and made some observations concerning brain abscess in general. Case I was an abscess of the right temporosphenoidal lobe. Recovery. No symptoms of brain lesion. No abscess suspected. Operation made for mastoiditis. Removal of necrotic bone forming the roof of mastoid antrum revealed abscess. No symptoms of aphasia. Case II. This case had longstanding otitis media, recurring frequently, and had often complained of pain on mastoid, which at those times was tender to the touch. When first seen, patient was comatose, with convulsions recurring frequently. Patient had had sixty in twenty-four hours prior to the author's first visit. The mastoid was opened, but no pus was found. He continued opening the skull upward over the temporosphenoidal lobe. Dura bulged. He incised freely, giving vent to flocculi and serum. Patient had but two convulsions

since. Regained partial consciousness, but died in forty-eight hours after operation.

Foreign Bodies in the Cornea.—Dr. Dudley S. Reynolds, of Louisville, Ky., said that injuries of this character should be classified according to the depth of penetration and extent of surface. The foreign bodies should be classified as metallic, ligneous, vitreous, and calcareous. Of whatever character they might be, no kind of foreign substance should be left long in the cornea. Where the epithelium alone was involved, the injury should be classified as severe. Wounds penetrating the anterior elastic layer, even though of very limited extent, should be classed as grave. Those which penetrate through the cornea should always be regarded as perilous. Treatment of the serious, the grave and the perilous varieties should conform with some general preconceived plan.

The Transverse Fascial Incision for Operations in the Pelvis.—Dr. Emil Ries, of Chicago, contributed a paper on this subject. In order to gain reliable fascial protection for incisions for pelvic work, it was desirable not to have to incise the fascia in the median line. Pfannenstiel's method was a useful improvement where the organ or tumor to be removed was not large. It began with a transverse incision through skin, fat and fascia. The fascia was then dissected up from the recti and raised as a flap with fat and skin. The recti were then separated and peritoneum incised in the median line. After the operation in the pelvis was finished, the peritoneum and recti were sutured in the median line, the fascia and skin transversely. The author had used the incision for various operations on the tubes, ovaries, uterus, appendix, and reported favorable results.

Suppuration of Nasal Accessory Sinuses.—Dr. J. A. Stucky, of Lexington, Ky., pointed out the importance of early recognition of suppuration of nasal accessory sinuses. Frequently peculiar anatomical inter-relationship of the different sinuses, when involved in suppuration process, rendered the symptoms obscure and misleading. Suppurative products might exist in latent form, giving rise to no local symptoms, and eventually resulting in systemic infection. Chronic inflammation in a closed cavity had a tendency to pus formation. He reported fatal cases due to absorption of pus or the invasion of suppurative inflammation through the optic foramen or holes in the cribriform plate to the base of the brain. The sequelæ of chronic suppuration of any accessory sinuses were frequently due to some form of neurasthenia and migraine. An increased number of cases were probably due to grip, pneumonia, and strenuous indoor life. The treatment was the same as for pus formation in any other part of the body, this is, free drainage. The middle turbinate most frequently caused obstruction of natural openings or a hindrance to free drainage, and the early removal decreased the necessity for more extensive and radical operation later.

Strictures of the Urethra.—Dr. A. Ravogli, of Cincinnati, Ohio, said that urethral strictures were affections of localized tracts of the mucous membrane and of the submucous layer of the urethra, resulting often from gonorrhea, and not rarely from trauma or from traumatic urethritis. The symptoms were mostly local, but at times they might be the cause of general symptoms and of neurasthenia. Strictures were of different varieties, spasmodic and organic. The organic strictures were to be divided into wide and narrow, the latter being the result of the former. Both were the cause of impairment of micturition and of the production of inflammatory symptoms of the genito-urinary organs. Strictures were somewhat diminishing in their frequency, and this must be credited to the recent method of treatment of gonorrhea. In their treatment, one might expect a great deal of benefit from systematic dilatation and from remedial applications, but in some very serious cases external urethrotomy was imperative.

The Perilous Calms of Appendicitis.—Dr. Robert Wallace Hardon, of Chicago, read a paper on this subject, in which he presented the following conclusions: (1) Defervescence of symptoms and apparent better condition of the patient do not always mean recovery, but may be the forerunner of a dangerous condition. (2) As there is no specific for the disease, no matter what treatment is used, the one who procrastinates should shoulder the responsibility for the death. (3) When a clear diagnosis is made, but one treatment should be advised, that of operation as soon as possible under the conditions, or the golden opportunity may be forever gone. (4) The physician who does not explain the great dangers of delay and the small comparative danger of operation, is doing his patient a serious injustice which often leads to fatal results. (5) Operation at the proper time usually greatly shortens convalescence, and eliminates all danger from this cause thereafter. (6) Procrastination is the greatest cause of surgical death, operation often being performed as a last resort when little hope of recovery exists.

The Prevention of Appendicitis.—Dr. William M. Harsha, of Chicago, stated that from available figures it would seem that this disease was more frequent in America than elsewhere. This was on the assumption that the mortality rate was much the same in England, Germany and France, where modern methods of medical and surgical treatment were practised, and where statistics were or should be reliable. In England and Wales, with a population of about 33,000,000, there were 1,244 deaths from appendicitis and perityphlitis in 1901, or 38 per million. In 1902 there were 1,485 deaths, or 45 per million. In Illinois, with a population of about 5,000,000, there were in 1903 471 deaths from appendicitis, or 94 per million. In Chicago alone, which represents nearly two-fifths of the population of the entire State, there were 249 deaths in 1902, and 260 in 1903, being at the rate of 140 per million. The same high death rate was approximated in other cities of the United States, especially in similar latitudes. New York City had, in 1903, 439 deaths, or 123 per million. Statistics of deaths from this disease in various cities, both at home and abroad, were given. Considering the causes that might be influenced by treatment, the author believed errors of diet were the most frequent. The disease occurred most frequently at the age and in the sex in whom faulty habits of eating and errors of diet were most common, from ten to thirty years. It was common to see attacks follow an immoderate meal, or the ingestion of indigestible articles of food. If one had transgressed in either of these ways and felt the approach of an acute digestive disturbance, the rational treatment was the prompt evacuation of the whole digestive tract, keeping it empty, and urging strict recumbency. Cholera morbus ushered in many cases of appendicitis, which were regarded as the primary trouble. The acute digestive disturbance, irritating the mucosa, was followed by stenosis of the base of the appendix and the infection ensued. This he had observed formerly in a considerable general

practice. While fecal concretions or foreign bodies were less frequent causes of appendicitis than was formerely supposed, they caused probably ten per cent. of cases. As to treatment, the individual case must be considered by itself, its etiology carefully studied, as well as any peculiarity, and treatment adapted accordingly. In one case it would be necessary to regulate the habits of eating, in another to cultivate immunity from colds or proper habits of exercise, while digestive disturbances of various kinds would require attention in others. In all the proper hygienic conditions should be secured to keep the vital resistance up to the highest point. During the past six or seven years he had advised these measures as preventive after one attack in which there had been no operation, and so far as can be known, he believed recurrence had not occurred in over 20 per cent., most of these being in young people, partly because of the greater frequency in the young, and in part he believed because of lack of intelligent cooperation on the part of the patient. The consensus of opinion was that more than 50 per cent. of the cases not operated upon recurred.

The Mortality of Appendicitis.—Dr. Channing W. Barrett, of Chicago, read an interesting statistical paper on this subject, which was accompanied by a series of tables. Table 1 showed that Chicago still had a mortality in appendicitis about equal to .01 of the mortality from all causes. Table 2 showed that the percentages of female mortality from appendicitis varied very little from the percentage of female mortality from all causes, and that appendicitis was to be looked for as common in the female, notwithstanding the old belief that it was rare. Table 3 showed the greatest mortality at the best period of life, early adult life, the greatest number dying at any one year of age being 22 at the age of nineteen years, the average age for all deaths being 26.54 years. Table 4 showed that leaving out the chronic cases the average duration of the disease in the 372 cases in which the time was mentioned was 8 33-76 days. Murphy's mortality cases showed that the average time after operation until death was 2.8 days. This demonstrated that his vast number of fatal cases were operated upon at the end of the sixth day, while all authorities conceded that an operation on the first or second day was safe and desirable. Table 5 showed that the most frequent cause of death from appendicitis was suppuration of the appendix, caused by perforation, gangrene, or passage of the infection through the wall, and peritonitis; and, further, that adhesions and obstruction were common. Many cases did not have the advantage of hospital treatment or an operation. An early diagnosis was more desirable, yet the Bureau of Vital Statistics considered that a diagnosis was not made at all in 105 cases; a few of the remainder were made by the Coroner. Some were made post-mortem, and one could never know how many were made too late for any operation to save life. The long, but only partial, list of vague diagnoses copied from the death certificates showed that in all probability some cases escaped detection. The author submitted the following conclusions: (1) An early diagnosis is of the first consideration. (2) All troublesome appendices should be removed without waiting for an acute attack. (3) All acute cases should be dealt with surgically in the interval between the onset of appendicitis and the dangerous rupture, without waiting for pus outside the appendix, for peritonitis, for adhesions, or for a possible but remote interval. (4) Cases of perforation or gangrene, with localized abscess, should be operated with drainage or removal of the appendix, according to the judgment of the operator. (5) Cases with perforation or gangrene without a wall of adhesion are in still greater need of an outlet for the infection to lessen the tendency of infection to travel inwards. (6) Price, Murphy, Hawkes, and others have shown a better percentage of recovery by the operative treatment of acute perforative peritonitis. (7) A case of acute appendicitis should be operated upon at anytime if the patient's condition will admit of an operation, unless the case is rapidly and beyond a question of doubt convalescing. In this latter case we should wait until all acute symptoms have passed. (8) Healthy appendices should be left alone. (9) Proper treatment does not contraindicate the use of stomach lavage, or the withholding of food, and when proper, these things should be employed, with or without operation. (10) Life is not the only consideration. The time of cure and after conditions are important. A case going through an acute attack without operation is saved by the adhesions. Adhesions are life-saving for the time, but they may be death-dealing afterward. The waiting treatment favors adhesions; early operation avoids them. An early operation sends the patient home in from ten days to three weeks. Twelve cases treated by the rest treatment, reported in the *Journal of the American Medical Association*, June 22, 1902, show an average of 60 7-12 days from the onset of the disease to the discharge of the patients from the hospital.

Remarks on the Etiology of Fissure in Ano.—Dr. J. Rawson Pennington, Chicago, said that a fissure might be located at any point in the circumference of the anal canal. Its most frequent location, however, was near the posterior median line. No satisfactory explanation for this fact had been given; neither had anyone proffered a satisfactory reason why it occurred in the anterior quadrant in less than one per cent. of the cases in males, and in more than eight per cent. of the cases in females. It seemed to the author that the theories usually taught and accepted as the cause of this disease were, at least in many cases, erroneous, and that we should have a more comprehensive etiology. He regarded the location of the ulcer as anatomical, and depended principally upon the support given to the tissues of the anal canal by the sphincters and levatores ani muscles. When the canal was overdistended, the dorsal surface received the least support from these muscles, the anterior the next, while the sides received the greatest. At the terminal portion this relative support is due to the difference in the distance between the posterior commissure and the tip of the coccyx, the origin of the external sphincter, and the tendinous center of the perineum, its insertion and the anterior commissure. Because of this difference, the posterior fibers of the muscle are more deployed than those of the anterior. Hence, when pressure was made from within outward it was obvious, since muscle fibers were easier separated or split than broken at right angles, that the weakest point in this muscle was at or near the posterior commissure; the next weakest point was at or near the anterior commissure. This latter point was weaker in women than in men. The lateral quadrants or sides received the greatest support from this muscle. Anatomical conditions and relations, almost identical with these, existed between the levatores and the proximal portion of this canal. Therefore, when this canal was placed under sufficient stress to rupture its tissues, the tear, all things being equal, should occur first on the dorsal surface, as it received the least muscular support; second, on the anterior surface, as it was the next weakest point, and, third, or last, on the sides. This was the sequential order in

which the respective tears of this canal should and do occur, and they not only corresponded with the weakest points in the muscular cylinder that surrounded and supported these canals, but with the statistics of the sequential location of fissure in ano.

The following papers were likewise read and discussed: "Causation and Radical Cure of Quinsy," by Dr. John F. Barnhill, Indianapolis, Ind.; "Cranial Injuries," by Dr. Shelby C. Carson, Greensboro, Ala.; "Internal Hemorrhoids, and Their Treatment," by Dr. Wells Teachnor, Columbus, Ohio; "A Case of Bilateral Tic Douloureux, treated by Removal of the Right Gasserian Ganglion and the Left Inferior Dental Nerve," by Dr. W. O. Bullock, Lexington, Ky.; "Hernia of the Tube," by Dr. Frank T. Andrews, Chicago.

Officers.—The following officers were elected for the ensuing year: President, Dr. Bransford Lewis, St. Louis, Mo.; First Vice-President, Dr. Frank P. Norbury, Jacksonville, Ill.; Second Vice-President, Dr. J. Henry Carstans, Detroit, Mich.; Secretary, Dr. Henry Enos Tuley, Louisville, Ky., re-elected; Assistant Secretary, Dr. John F. Barnhill, Indianapolis, Ind.; Treasurer, Dr. S. C. Stanton, Chicago, Ill.

Indianapolis, Ind., was selected as the place for holding the next annual meeting; the time, second Tuesday, Wednesday and Thursday in October, 1905.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting, October 4, 1904.

The President, Pearce Bailey, M.D., in the Chair.

A Case of Unverricht's Type of Family Myoclonus, But Without Epilepsy.—This was presented by Dr. L. Pierce Clark. The patient was a married woman, twenty-six years of age, of Irish descent. There was a family history of myoclonus in the father, uncle and sister; of facial tic in a grandmother, of hysteria in the mother and paralysis agitans in a great-aunt. The patient was well until her seventh year, at which time the myoclonus began. It consisted of arhythmic, clonic spasm of the left sternocleidomastoid muscle, and gradually spread into the entire left shoulder girdle, as well as the arm, trunk and thighs. Subsequently, the right side became affected in a similar manner. The muscles most markedly affected were the sternocleidomastoid, the trapezius, the deltoid, biceps, latissimus dorsi and glutei. The right side was most involved. Emotional excitement, embarrassment and anxiety increased the spasm. The gait was at times affected. The spasm was quieted by lying down. For the past eight years the spasm had been more or less continuous, with varying grades of paroxysmal intensity. It ceased during sleep. Speech was occasionally affected and swallowing was at times difficult. Laryngeal sounds were occasionally emitted. The patient had never suffered from epilepsy or from any attacks epileptoid in character.

Dr. B. Sachs asked how a case of this character could be distinguished from the *maladie des tic convulsifs*, to which the clinical picture bore a close resemblance? In Dr. Clark's case there did not seem to be anything more than a generalized convulsive tic, and without a distinct history of epilepsy he did not see how it differed from the affection described by the French writers.

Dr. Clark, in closing, said the question raised by Dr. Sachs had given rise to considerable discussion between the French and German schools. The case resembled Unverricht's type of family myoclonus in that the movements of the muscles were arhythmic, they were not purposeful, they were accompanied by paroxysms of intensity, but with no free periods. There was, however, no history of epilepsy, and some writers would no doubt classify the case as one of generalized tic.

A Case for Diagnosis.—This was presented by Dr. B. Sachs. The patient was a man, aged thirty-five years, who first came under the speaker's observation in 1897. He was a machinist by occupation. He had never come in contact with metallic poisons, and gave no history of gonorrhea or syphilis. He first noticed that pulling the left half of his mustache caused him no pain, while pulling the opposite half gave rise to the usual sensation. Subsequently, he had a carbuncle on the left side of the lip, which was opened without causing him any pain. Thorough and repeated examinations revealed nothing excepting a dissociated sensation in the distribution of the left trigeminal nerve. During the first year there was only a loss of pain and temperature sense in the greater part of the three branches of the nerve, with subsequent loss of sensation of the left cornea, and more recently, atrophy of the left masseter muscle. During his last examination of the patient, Dr. Sachs said, he noticed a slight involvement of the middle branch of the right trigeminus. There was no dissociation of sensation in other parts of the body, and no evidences of systemic or other disease. The knee-jerks were normal. Dr. Sachs said he had seen two cases similar to this one, in which the only symptom consisted of a dissociated sensation of the trigeminal nerve. One explanation he had to offer was that it was an unusual case of syringomyelia, in which the cavity formation was in the pons and not in the spinal cord. This he regarded as a rather venturesome diagnosis, because in such a case, in all probability, some of the other cranial nerves would have become involved after so many years. Another and more likely explanation was that the case was one of primary degeneration of the nerve, perhaps fibroid in character, such as had been described as occurring in nerves in other regions. Whether it would be proper to call it a neuritis or not he did not know.

Dr. George W. Jacoby said, that one of the things to be considered in connection with the case shown by Dr. Sachs was beginning tabes. The speaker reported a case of undoubted tabes that had been under his observation during the past eighteen years; in which the first symptom was an analgesia in the distribution of the middle branch of the trigeminal; there was not a dissociation of sensation, simply a reduction, which gradually became complete, and this persisted for five or six years before any other symptoms of tabes manifested themselves. In that case, Dr. Jacoby said, antisyphilitic remedies were given from the very onset of the analgesia, and persisted in for a long time, without exerting the slightest influence upon the subsequent development of the tabes.

Dr. William M. Leszynsky called attention to the decided atrophy of the muscles in the case shown by Dr. Sachs. The speaker said he saw no reason why the dissociated sensation should necessarily indicate the presence of syringomyelia. Dissociated sensation was occasionally seen in other conditions affecting the peripheral nerves.

Dr. Joseph Collins said, that while cases of tabes like the one described by Dr. Jacoby were very uncommon, they were occasionally met with, and he

had recently seen one come to autopsy, after twelve years' observation. In those cases, however, there was no pronounced muscular atrophy, which was such a conspicuous feature in Dr. Sachs's case, constituting, practically, a facial hemiatrophy. The more or less uninterrupted quivering or flickering of the muscles, particularly the masseter, as well as the distribution and course of the affection, militated against a peripheral trigeminal lesion. Dr. Collins said he was inclined to regard the case as one of central syringomyelia.

Progressive Muscular Atrophy.—Dr. L. Pierce Clark said, that cases of progressive muscular atrophy had been reported which were similar to the case shown by Dr. Sachs. In those cases the skin itself was not involved to the extent that it was in facial hemiatrophy. The case might be one of progressive muscular atrophy, with sensory changes due to degeneration of the sensory root.

Dr. Sachs, in closing, said he did not think the case had any features in common with ordinary facial hemiatrophy. For a period of five years, this patient only presented sensory symptoms. The apparent atrophy was due to wasting of the muscles supplied by the motor branch of the trigeminus. The quivering of the muscles, to which Dr. Collins had called attention, was more apparent than usual, and was probably due to temporary nervousness. The speaker said he had kept the possibility of early tabes in mind, but had found no evidences of that disease.

Dementia Præcox.—Has the recognition of dementia præcox advanced our conceptions of the various forms of mental derangement occurring in the adolescent period? Is not the present tendency to give too grave a prognosis in the youthful insanities? How frequently does dementia follow the mental derangements of early life?—Dr. B. Sachs, in opening the discussion of this subject, emphasized the fact that some cases correspond accurately to the types of dementia præcox described by Kräpelin and his followers. This was particularly true of the earlier forms of mental derangement occurring in members of families in which there was a very marked psychic taint, but even in these, many years might pass before an appreciable dementia sets in. The term dementia præcox, he thought, should be carefully restricted to such cases in which mental deterioration, at an early stage of the disease, was clearly recognizable, and should not be applied to those in which a dementia might set in in the far-distant future. The diagnosis of dementia præcox placed the stamp of an uncurable malady upon persons who might be sufficiently alert to be useful to themselves and to others for a long term of years, and in that sense did them distinct injustice. There seemed to be little gained in grouping widely differing cases under one heading. The older plan of clinical subdivision was more commendable, and the tendency to dementia should be insisted on only when there was reason to think that a deterioration was certain to develop at a relatively early period.

Dr. Adolf Meyer said, that the question under discussion was a very broad one. Largely through the influence of Kräpelin's earlier writings, the speaker said he had come to regard katatonia and hebephernia as degenerative conditions, and he was greatly surprised to see, in the fifth edition of Kräpelin's book, that the writer had apparently entirely changed his views on the subject, and had completely eliminated the degenerative features of those psychoses. Indeed, the very mention of degeneration to members of the Heidelberg school in 1896, when this great change took place, was looked upon as a sort of heresy. Instead of regarding these diseases of a degenerative origin, it was stated that they might befall anybody, just as general paralysis might befall anybody, and that they tended to end in dementia. Dr. Meyer said, he had always been inclined to believe that Kräpelin's rather sudden change of views was due to controversial reasons rather than to an actual conviction. The chief advantage that had been gained by Kräpelin's writings was that it had induced psychiatrists to break away from the old tradition of classifying all forms of insanity into melancholia, mania and paranoia, thereby neglecting many well-marked and striking forms of mental disease which could be readily recognized. Undoubtedly, Kräpelin went too far, a fact that he himself admitted when he said that the entire group was only classified provisionally, and would have to be still further subdivided. Kräpelin's description of dementia præcox was, on the whole, remarkably clear, and he was very painstaking in making the diagnosis. In a given case, all the symptoms might not be present, yet the patient might show some evidences of deterioration. Such cases might be regarded as allied to dementia præcox if the symptoms pointed sufficiently in that direction.

Dr. William Hirsch said, it seemed to him that this controversy concerning dementia præcox, as well as some other modern diseases, was largely a controversy about names. If it were not for the name dementia præcox, such a discussion would be practically unnecessary. The term did not originate with Kräpelin, but was used by Pick, of Prague, fully thirty years before, to describe a condition very similar to that to which it had been applied by Kräpelin. The clinical picture of dementia præcox is so broad that near every juvenile case of insanity would fit into one of the various categories, and the question arises whether there is really one important feature which all these cases have in common. Dr. Hirsch said they surely had nothing in common in symptomatology, because the clinical picture was too broad. Was the dementia a common feature of dementia præcox? Personally, the speaker said, his experience coincided with that of Dr. Sachs. He could not convince himself that all juvenile psychoses, whether of the katatonic or other types, would terminate in dementia. There was one feature, however, that was common to all these cases of acute juvenile psychosis, namely, that they all occurred on a degenerative basis. "We would always draw the conclusion that we had not to deal with a normal individual. These juvenile psychoses only occurred in individuals with inferior mental powers, and this fact should always be borne in mind in connection with the prognosis. Such a person might return to his relatively normal state, that is, to the condition he was in before the onset of the attack, which was never an absolutely normal condition. The fact was often lost sight of that these people never had a normal mind, but taking that for granted, it went without saying that any acute mental disease might intensify this mental inferiority, and that the patient might be worse off than he was before. Even if very decided dementia was present during the acute stage of the attack, it would not necessarily be a permanent condition; the patient might recover from this dementia and regain his relatively normal condition. The impaired mental condition of these pa-

tients, Dr. Hirsch said, did not necessarily imply a lack of intelligence, but might be characterized by hypochondriasis, by a lack of mental equilibrium or by morbid impulses.

Dr. Emmet C. Dent said, that a recent anaylsis of the statistics at the Manhattan State Hospital for the past year showed that out of 911 patients admitted, 290, or about 31 per cent., were cases of dementia præcox. The speaker said, that after serveral years' study of Kräpelin's theory, he was still inclined to believe that it was premature to discuss it. The group of cases included under the term dementia præcox was a large one, and in the course of time more appropriate names would doubtless be found under which the various types could be classified. A case of dementia præcox, when properly defined, was just as distinct a type as depressive insanity.

Dr. T. P. Prout said, that five or six years ago he made some examinations of the blood in cases of so-called dementia præcox, and found that the results he obtained were very variable. In some of the typical cases, during the early stage, there was marked leucocytosis, while in others the number of leucocytes was decidedly diminished. A similar discrepancy was noticed in the differential count. It therefore seemed to him that different types of mental disease were embodied under this head.

Dr. Allen Ross Diefendorf, of Middletown, Conn., said that melancholia was recognized as a psychosis of involution, while dementia præcox was one of adolescence, and he could see no close relationship between the two. The symptoms of melancholia, as at present understood, were well defined, and it could be safely said that the condition was very rarely encountered during the period of adolescence. A review of about one-half the cases admitted to the Connecticut Hospital for the Insane during the past five years, showed about 184 cases of dementia precox. A subsequent review of those cases showed that twelve were mistaken for melancholia. Of these, seven were of katatonic type, or were later recognized as katatonia, and five as hebephrenia. The speaker thought there was very little danger of confounding melancholia with dementia præcox.

Dr. Joseph Collins said, he did not agree with Dr. Sachs that the modern psychiatrist showed a tendency to make the diagnosis of dementia præcox with alarming frequency, nor did he agree with Dr. Hirsch that there was anything typical in the clinical picture of this psychosis, or anything in common between the various types of the affection, as described by their originator. Furthermore, he did not think that Kräpelin maintained that position. In his study of that writer's work, he could recall no ground for the statement that all these cases occurred on a degenerative basis. On the contrary, Kräpelin maintained that dementia præcox was a disease that occurred in individuals who were apparently sound, and that it was due to an auto-intoxication.

Dr. Edward D. Fisher said, he was inclined to think that Kräpelin allowed a wide latitude in his differential diagnosis of dementia præcox, and that his cases were rather younger than those cited by Dr. Sachs. For example, take an apparently normal individual of fourteen, sixteen or eighteen years, who suddenly, with or without psychosis, may show himself unfit for the work he is doing at the time, and is never able to take care of himself after that. We may have here a type of dementia which may never reach an extreme degree, that is, never go on to amentia. Such cases, Dr. Fisher thought, represented a large class to which Kräpelin referred in his writings.

Dr. Dent, in reply to a question, said that the cases of dementia præcox he has seen ranged in age from fourteen to twenty-five years. The average age was about twenty years.

Dr. Sachs, in closing, said that the figures quoted by Dr. Dent showed that a large proportion of the patients at the Manhattan State Hospital were being admitted under the diagnosis of dementia præcox, and he questioned whether many of those cases had gone on to a condition of complete dementia. The only point he wished to make was to throw a little doubt upon the extremely grave prognosis that had been given in this class of psychoses in recent years under the teachings of Kräpelin.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

SECTION ON TROPICAL MEDICINE.—*Continued.*

(Continued from Page 855.)

Leishman-Donovan Bodies.—These parasites were discussed by a number of the members of the Section on Pathology. Dr. W. B. Leishman, of London, first took up the main facts known about these bodies. Since first observed a large number of observers have written concerning them. Donovan, Marchand and Ledingham, Manson and Low, Bentley, Rogers, and others have observed them, and it is becoming more and more evident that the disease associated with their presence is by no means uncommon in tropical countries, and there can be little doubt that, as the parasites themselves and the methods necessary for their demonstration become better known, more will be learned concerning them. Cases have been reported from countries so widely apart that it would be rash at this stage to attempt to assign geographical limits to the disease. The first case in which the parasites were found was that of a soldier, invalided from Dum-Dum in 1900 with tropical cachexia and splenomegaly, and soldiers at Netley presenting a similar clinical picture were so frequently found to have served in or near this station that he termed the condition "Dum-Dum fever." Such a name was, however, only intended as a temporary expedient for the avoidance of a periphrasis in speaking of the condition with which the bodies were associated, and, as it appears likely that the disease may prove to be identical with kala-azar, this well-known name will probably be adopted. Up to the present moment cases have been reported from three or four widely separated districts of India, from China, Tunis, Algiers, Arabia and Egypt. As knowledge of these endemic areas is added to, it would be of great interest to endeavor to find out any physical peculiarities they may possess in common, as this may help in the search for the alternative host which the analogy of malaria and other protozoal diseases would suggest to be necessary.

Distribution of the Parasites in the Body.—Originally found in the spleen, the parasites have since been met with in the liver, the mesenteric glands, the bone marrow, the kidney, and in ulcers involving the intestinal mucosa. The great majority of those who have searched for them in the peripheral blood have failed to detect them, but M. Laveran is of the opinion that certain small bodies occurring in the red

corpuscles in some of his specimens are young forms of the parasite. The most exhaustive accounts of the distribution of the parasites are those of Marchand and Ledingham and of Christophers, and their results are in many respects in marked agreement. According to these and other observers the parasites appear to be chiefly, if not solely, intra-cellular, and are met with in the protoplasm of large mononuclear cells, which are probably, as Christophers suggests, "macrophages," and of the same nature as those large phagocytes which, in malarial cases, are filled with ingested melanin granules. A fact which had been noted, and which appears to be significant, is that neither the parasites nor the cells which harbor them appear to suffer from their mutual association. In specimens obtained by splenic or hepatic puncture during life the parasites are, however, usually found free or in groups of several members, and such free or agglomerated parasites are frequently seen to be embedded in a structureless matrix or stroma, straining grey or pale blue with Romanowsky's method. This stroma or matrix is of importance, as it is largely owing to the different conceptions as to its origin that different views have been taken as to the nature of the parasite. That the true origin of this stroma lies in the disintegration of those large mononuclear cells through mechanical violence, and that the stroma represents a fragment of the protoplasm of one of those host cells, appears probable from the work of Christophers and of Marchand.

Symptomatology.—(1) Splenic and hepatic enlargement—the former being apparently constant, while the latter is common but not invariable. (2) A peculiar earthy pallor of the skin, and, in the advanced stages, an intense degree of emaciation and muscular atrophy. (3) A long-continued irregularly remittent fever, of no definite type, lasting frequently for many months, with or without remissions. (4) Hemorrhages, such as epistaxis, bleeding from the gums, subcutaneous hemorrhages or purpuric eruptions. (5) Transitory edemas of various regions or of the limbs. (6) Complications, such as congestion of the lungs, diarrhea and dysentery, have been frequently reported, and are occasionally the immediate cause of death. (7) Blood count. The cases coming under his own notice have shown a marked mononuclear increase, an interesting point, if confirmed by further experience, in view of the proved absence of malaria. To these positive signs may be added certain negative ones of hardly less importance: First, the absence of malaria, except as a concurrent affection, which yields to appropriate treatment; secondly, the negative result of the agglutination test to typhoid and Malta fever; and, thirdly, the resistance to medication, and especially to quinine—at all events, in the later stages of the disease.

Relation to Kala-azar.—It will be noticed that the symptoms detailed are very similar to those of kala-azar, a disease which has furnished matter for discussion at previous meetings of this Section, and concerning whose causation great differences of opinion have existed. He had suggested in his original communication that search should be made for these bodies in kala-azar, and Bently has since reported finding them in the spleen in cases of this disease, while his results have been confirmed more recently by Rogers. It is, perhaps, too early to say definitely that they are the cause of kala-azar, but it certainly looks as though this were the case, as they seem to occur constantly in this disease. If it should be so, the question arises whether the other cases in which the parasites have been found are identical with the kala-azar, and, if this identity is proved, we must then admit that the geographical distribution of kala-azar is much wider than has been supposed, and, further, that it is not uncommon amongst Europeans.

The Nature of the Parasite.—On this point, so important for the solution of many of the unsolved problems in connection with the disease, there has been a divergence of opinion, and it is much to be hoped that the question will soon be definitely settled. When it is, analogy should help us in clearing up the rest of the life history of the parasite, and put us on the track to what should be our ultimate goal—the prevention and, if possible, the stamping out of the disease. Stated briefly, the views that have been enunciated are the following: (1) Major Ross, working with films sent to him by Donovan, came to the conclusion that the bodies represented a new genus, belonging to the sporozoa, which he did me the honor to name Leishmania. (2) M. Laveran, also working with films from Donovan's cases, pronounced the bodies to belong to the piroplasmata, and gave them the name *Piroplasma Donovani.* (3) In his own opinion they appeared to represent a stage in the life-history of a flagellate organism, closely resembling a *Trypanosoma,* if not actually belonging to that genus. A few of those who have recorded cases of the disease have expressed their views upon this question of their nature, but Marchand and Ledingham, as a result of the study of their case, have come to the same conclusion as myself. To examine these views more in detail;—first, M. Laveran's view, that they are a species of *Piroplasma*—A parasite of the red blood corpuscles—has met with little support from other observers, whose most careful search has failed to demonstrate their presence in the red cells of the peripheral circulation, while, further, it has been pointed out that the arrangement of the chromatin, the method of apparent multiplication, and the tendency to occur in the protoplasm of the large mononuclear cells of the spleen and liver further militate against this theory. Such high authorities as Manson, Ross, and Marchand have also pronounced against this view. When the parasites are very numerous in a film it must happen at times that some are superimposed on the red cells, and when this occurs it is no easy matter to say whether it is a case of a true inclusion or not. But, in addition, Laveran has found pyriform bodies recalling the shape of *Piroplasma bigeminum* and he further regards the pale, grey-staining stroma, frequently seen surrounding the bodies, as representing the degenerated remains of the red corpuscle which harbored the parasite. A more probable explanation of this stroma appears to be that of Christophers. In a later publication Laveran reports that he has met with small intracorpuscular bodies in some of Donovan's films, taken from the peripheral blood of patients in whose spleens the parasites had been detected by spleno-puncture. These bodies Laveran considers as young forms of the *Piroplasma,* and he mentions a series of points in which they appeared to him to differ from young malarial parasites. This observation has not yet been confirmed.

Secondly, in Major Ross's view one has to deal with a representative of a new genus of the sporozoa, and he regarded "the individual bodies as spores

produced in the matrices, which would appear to be relics of the parent organism." In this connection it may be noted that the parasites found by Wright in a Delhi boil, may appear to be either identical or very closely related to the spleen bodies, are also regarded by him as belonging to a new genus, to which he has given the name "*Helcosoma.*" His own view is that the new bodies represent a stage in the development either of a *Trypanosoma* or of some closely-allied member of the *Flagellata.* Marchand and Ledingham endorsed this close resemblance, and also supported the deduction based upon it. Schaudinn, in following the various transformations undergone by a blood parasite of the stone owl when taken into the stomach of a mosquito (*Culex pipiens*), comes to the conclusion that this *Halteridium* is in reality a sexual form of a true trypanosome, to which he gives the name *Trypanosoma noctuae.* Again, Prowazek, working on similar lines to those of Schaudinn with a parasite of the house fly—*Herpetomonos muscæ domesticæ*—finds similar trypanosomal forms which also assume resting forms in much the same manner as *Trypanosoma noctuæ.*

From the descriptions and figures given by Schaudinn and Prowazek of these resting forms of trypanosomata, a very close resemblance may, he thinks, be traced between them and the new bodies, and in this resemblance lies the possible explanation of the flagellate origin of the bodies spoken of.

Elimination.—A fact of great importance in connection with the possible means by which the parasites are eliminated from the system is the presence of the bodies in the ulcers of the intestinal mucosa. This fact was brought out by Christophers and also by Manson and Low, and, from the frequency with which dysenteric complications have been reported in the course of the disease, it seems probable that this ulceration is a fairly constant feature. The parasites have not yet been found in the urine, but, as their presence in small numbers in the kidney has been noted, this is a possibility not to be overlooked. With regard to the discovery of Wright, already alluded to, that very similar parasitic bodies are met with in the well-known Delhi boil, it is obviously of the first importance that the identity or non-identity of those parasitic bodies with the splenic bodies should be established, and it is possible that the cercomonads which Ross found in these boils may be developed from, or may develop into, these bodies.

Cachexial Fever and the Leishman-Donovan Bodies.—Dr. Leonard Rogers, of Calcutta, presented a highly interesting paper on this subject. In a previous paper on cachexial fever he had found the parasites originally found by Cunningham in the Delhi boil many years previously, and a series of observations with examination of the blood from splenic punctures has shown him the probable identity of cachexial fever and the new parasites.

Races Attacked.—The great majority of the patients at the Medical College are natives, and my cases include Hindus, Mohammedans, Chinamen and Burmese women, and also two Europeans. Several of them had first been attacked with the fever while living in Calcutta. In addition to these he had found the parasite in the spleens of four cases in the European General Hospital, two being adults and two children, while several other similar cases clinically are under observation there, so that Europeans not infrequently suffer from the disease. Further, the disease frequently attacks more than one member of a family even among Europeans, a father and child having died of the disease, both with cancrum oris, in the European Hospital recently, while at the present time a mother and son are suffering from the disease there, in both of whom the parasite was found by spleen puncture. This, he pointed out in his original report, was the most characteristic feature of the distribution of kala-azar cases, in which it was the rule rather than the exception in hospital cases for at least half the household to have died of the disease. A similar, although much less marked, tendency is also present in the endemic form.

Cultivation of the Protozoal Parasite.—The recent cultivation of *Trypanosoma* has led him to try to obtain similar results with the parasites of cachexial fever by means of adding the blood obtained by spleen puncture to a small quantity of sterile citrate or soda solution, to prevent the blood clotting, and then keeping it under different conditions. Although when the solutions were kept at blood heat the parasites very rapidly degenerated and disappeared, yet when placed in a cold incubator at 27° C. and films made daily, they retained their natural conditions for several days and stained perfectly. Moreover, they increased markedly in numbers, so that in some instances, instead of two or three in a field of an oil immersion lens, as in the freshly-taken blood, after a day or two scores, and even a hundred, very young forms could be found in the same area. Further, very numerous dividing forms were found, even in a single field, although in the original specimens these were very few and far between, and required much searching in specially good specimens to enable even a few to be found, while in my experience the very young forms, which were so numerous in the cultures, are very rarely met with in fresh spleen-puncture blood, and then only within large cells, and not free in a gelatinous zooglea mass as in the cultures. These multiple forms result from the repeated subdivision of the nuclei of the ordinary oval form, as described in my former paper. In addition to this method of division, another frequent manner is a single division of both nuclei, followed by the splitting up of the parasite into two, the separation usually beginning from one end. The profession then has clear evidence of the survival and multiplication of the organism outside the body. As at a temperature of 27° C. the parasites only lived for three or four days, he next reduced the temperature of the cold incubator to 22° C. This temperature he found to be more suitable to the parasites, as they multiplied more readily, and when very few at first, several could easily be found in a field after a day or two. Further, he noticed that many forms of a considerably larger size than he had seen in fresh blood films appeared in a single day. This caused him to look out for flagellated bodies, for on first finding the spleen parasites in Dinajpur he was struck by the resemblance of the double nuclei, one larger than the other, with those of *Trypanosoma*, as Major Leishman had been before. Within the last few days in two of his cultures unmistakable *Trypanosoma* have appeared, together with smaller pear-shaped-flagellated bodies like those described by Plimmer in tsetse fly disease and other intermediate forms. The most marked of these cases (from which the illustrations have been taken) showed completely developed *Trypanosoma* with thick flaggella, macro-nucleus and micro-nucleus after incubation for one day, while the living forms were also seen in the blood culture moving rapidly among the corpuscles. They were quite numerous, and could readily be found after only a short search in a stained film, as will be seen from the specimen sent. This case was a typical one of cachexial fever in a Chinaman, whose spleen blood before incubation showed only fairly numerous

oval forms described by Leishman. This case had also been in hospital for fever two and a half months before, at which time he also found a few typical oval parasites by spleen puncture. The other case in which the trypanosomes have developed was by good fortune a case of kala-azar from Assam, from whom his assistant, Assistant Surgeon G. C. Chatterjee, kindly got some blood by spleen puncture, and after incubating for five days at 22° C. were found in the citrated blood a number of intermediate forms and a few full-developed trypanosomes. The fully formed trypanosome has, therefore, been already found in his cultures in both the endemic cachexial fever of Lower Bengal and also in the epidemic form of Assam, known as kala-azar, and the true nature of the organism is at least clear, Major Leishman's original hypothesis that the bodies he found were degenerate trypanosomes not being very far from the truth, as they must now be looked on as one stage of the epidemic went, than those whose temperature found by him.

Treatment.—Quinine has been unavailing. Segregation alone has resulted in any measure of success from the prophylactic side.

Piroplasmosis.—Major C. Donovan, of Madras, contributed to the discussion, basing his remarks on the observations of 72 cases of this old type of disease of supposedly newly discovered etiology. He proposes the name Piorplasmosis, believing that Laveran is correct in assigning the parasite to the genus *Piroplasma*. The clinical description of the disease was dwelt upon at length.

Notes in Kala-Azar.—Dr. Chas. A. Bentley, of Tezpur, Assam, read this paper. His conclusions were as follows:

It appears that the clinical history and the epidemiology of kala-azar gives certain indications as to necessary lines of research. It has been my experience during the four years during which he had been familiar with the disease that cases suffering from severe fever appeared to be more dangerous, as far as the spread of the epidemic want, than those whose temperature was more frequently near the normal.

It is these cases with high and continued fever who show on splenic puncture a larger proportion of fission and conjugation forms than the milder type of case. Again he had frequently noticed when the epidemic was at its height that cases which showed dysenteric symptoms, and especially those who became bedridden while suffering from dysentery, were sure to be followed by fresh cases in the same household or among the attendants. When the intestinal form of the disease is in abeyance, the epidemic gradually assumes a milder type, with a corresponding decrease in the case mortality. Another fact which appears to him to be of importance in regard to any investigation of the disease, is the comparative immunity of Europeans. Although isolated cases are met with in Europeans, they are uncommon. This fact appears to indicate that certain conditions are necessary for the spread of the disease, to which Europeans as a class are rarely exposed; and therefore the careful study of the case history of such patients when they are met with may be expected to give a valuable indication regarding the source of infection.

Tropical Splenomegaly and Oriental Sore.—Lieutenant S. R. Christophers said that whoever may have first seen the parasitic bodies variously known as the Leishman-Donovan bodies — *Piroplasma Donovani*, *Leishmania*, or *Helcosoma*—it is undoubtedly chiefly owing to the researches of Donovan that the occurrence of an entirely new parasitic disease of man was first brought to the attention of parasitologists and students of tropical medicine generally. With Donovan's discovery of the disease in Madras and Laveran's definite announcement of the parasitic nature of the bodies, speculation at once became rife regarding their zoological position, life-history and method of transmission. The earliest researches centered chiefly around the morphology and the zoological affinities of the bodies. They were thought by Leishman to be flagellates, on account of the conspicuous chromatin masses, which certainly appear to represent a karyosome and centrosome very like those of the trypanosomata. But that they are any form of degenerated tryphanosome is exceedingly unlikely in the face of the large number of recorded cases in which no trypanosomes have been present. The same unlikelihood pertains to their supposed affinities with the genus *Piroplasma*, and the discovery by Wright of the bodies crowded in the cells of granulation tissue in tropical ulcer would appear to be the final death-blow to this view. It has been suggested that the bodies are of the nature of micro-sporidia, but the proof for this rests on no further evidence than their remarkable uniformity in size and appearance. On the data we have at our disposal, it is indeed impossible to place these bodies in any of the genera or better known divisions of the sporozoa. A good deal of speculation has raged around the nature of the so-called "matrix" of Ross, "zooglea mass" of Manson, and "red corpuscle" of Laveran. In his first report he gave reasons for considering this nothing more or less than the cytoplasm of endothelial cells of the spleen, more especially that derived from the large macrophages which bud and vacuolate so as to give rise to the curiously definite masses in question. The process is much increased by the fluid usually present in the barrel or needle of the syringe used for puncture. A study of sections shows very clearly the real condition, which is one of endothelial cells gorged with the parasites. In regard to the nature of the infective process, it has very generally been taken for granted that the recently discovered parasite is a blood parasite, much in the sense that the malarial parasite is. If Laveran should be right in his surmise that the parasite is a species of *Piroplasma*, this will, of course, be true. As matters stand at present, the parasite does not appear to be related to this genus or to be a parasite at any time of the red cell. Are they to be considered as parasites of the plasma? On this point he has no hesitation in saying from the result of his recent researches that they are probably a blood parasite in no other sense than are the organisms of septicemic infection or the tubercle bacillus. While the attention of many observers was still directed to the novelty of the presence of the bodies in the spleen and liver of cases of tropical splenomegaly, Wright, in America, had, apparently independently, discovered the same bodies in large numbers in the granulation tissue of tropical ulcer, a lesion which had long been recognized as probably a specific local granuloma. That the bodies described by Wright are identical with those found in cases of enlarged spleen in Madras cannot be doubted after a study of the excellent photographs which accompany his paper. We also have the important communication from Captain James, that abundant forms indistinguishable from those in the Madras cases and in kala-azar from Assam were found by him in cases of oriental sore from North India. The general pathology of the lesion and the relation of the bodies to the tissues as described by Wright, makes it seem certain that in this case the newly discovered parasite is acting as the causal agent in a focal granuloma of the skin. Shortly after Wright's paper reached India, Donovan

found the characteristic bodies in small numbers in ulcers in an advanced case of the Madras disease with enlarged spleen and cachexia. Stimulated by the discoveries of Wright and Donovan, he examined very thoroughly the tissues of fatal cases of the disease, especially with reference to the skin and intestinal lesions found in such cases. The result has been to throw a considerable amount of light on the nature of the infective process. Bodies were found in the spleen, liver and bone marrow, intestine, lungs, testis and kidneys. In his first report he has already shown that the apparently free forms seen in specimens of splenic blood cannot be considered as other than forms artificially liberated by rupture of cells, more especially the large macrophages. The same relation holds good in the case of the liver and bone marrow, and in all three organs the condition may be described as an engorgement of the endothelial cells with the parasite. In the lung, testis and kidney, bodies were much less numerous, but were readily seen lying in cells of endothelial nature. Free forms were never seen in sections. In unulcerated papules of the skin, in small and large ulcers of the skin and of the intestine, the bodies were consistently present. They were as a rule scattered singly through the tissue, and appeared to be lying embedded in the cytoplasm of tissue cells. Closer investigation showed that they lay in the endothelial cells of the finest capillaries. No bodies were ever detected lying free in the lumen of vessels. In larger vessels, in the immediate neighborhood of granulation tissue, endothelial cells were seen containing from two to six bodies, and in many of the still larger ones cells crowded with bodies almost blocked the lumen. Briefly stated, in infection by the Leishman-Donovan bodies a type of infection exists in which the vascular endothelium is mainly implicated. The importance of such a fact is manifest. In the first place, it suggests the comparison of the Madras disease (chronic malarial cachexia) with the usual type of septicemia, in which, from the researches of Werigo and Kuhnan, it is evident infection of the blood stream with the septic organism is chiefly shown by the deposit of forms in the endothelium and leucocytes of the viscera. If, inded, we say that the disease seen in Madras is a systemic infection of septicemic type, we shall most nearly express what is known as to the nature of this new protozoan disease. This view will also allow us to see in oriental sore a local infection by the same organism. As regards the cycle of development of the parasite, multiplication of forms is mainly by binary fission, the larger fission forms being of secondary importance. The parasites having entered or been taken in by an endothelium cell, would appear to proliferate, causing eventually the disruption of the cell and the temporary setting free into the blood stream of the crowd of contained bodies. There does not appear to be any intracellular digestion of forms included in the endothelium cell, and this latter very probably constitutes a suitable host for the parasites, in spite of the fact that it may originally take them in by reason of its phagocytic properties.

Leishman-Donovan Bodies in Ceylon.—Dr. A. Castellani, of Florence, reports having found these bodies in patient, with tropical splenomegaly, in Ceylon, and Dr. Phillips, of Cairo, reports in finding them in Arabia and in Egypt.

Caution in Examination.—Sir Patrick Manson said that due precautions must be taken in the study of patients as the operation of splenic puncture is not free from danger.

Tsetse Flies.—E. A. Austin, of the British Museum, read an interesting paper on the varieties of the genus *Glossina*, or tsetse flies. Since these had come into so much prominence as carriers of *Trypanosoma* infection, they demanded more detailed study.

(To be Continued.)

BOOK REVIEWS.

Taylor on Genito-Urinary and Venereal Diseases and Syphilis. A Practical Treatise for Students and Practitioners. By Robert W. Taylor, A.M., M.D., Clinical Professor of Genito-Urinary Diseases in the College of Physicians and Surgeons, New York. New (3d) edition. Revised and enlarged. Lea Brothers & Company, Philadelphia and New York.

In presenting the third edition of this standard work on Diseases of the Genito-Urinary tract, the Venereal Diseases and Syphilis, the author has carefully revised, and in many places rewritten the text, which is profusely illustrated throughout with many new engravings and plates, both in color and monochrome. In order to keep abreast with the advance in this department, Dr. Taylor has added many new and instructive sections, thus bringing the book up to date in every detail, which undoubtedly makes it the most modern, and at the same time the most conservative and satisfactory guide both for the practitioner and student, and at the same time a valuable reference book for the specialist, containing, as it does, a thorough and systematic account of all that is recent and progressive in this special field of work. The sections devoted to diagnosis and treatment, both operative and non-operative, are so comprehensive, conservative and practical in every detail, that the physician who carefully reads them will be fully prepared to diagnose and treat this large and highly important class of cases in a scientific and thoroughly up-to-date manner.

The publishers are to be congratulated on the general appearance and make up of the book, which is far in advance of anything that has appeared on these subjects in recent years.

The Clinical Study of Blood Pressure. By Dr. Theodore C. Janeway, Lecturer of Medical Diagnosis, University and Bellevue Medical College. D. Appleton & Company, New York and London.

To have collected the immense mass of literature relative to the subject of blood pressure into one convenient and handy volume is the great service rendered by Dr. Janeway in this book.

He has classified the work under three heads, Physiological, Technical, and Clinical, giving a résumé of the important literature at the end of the book.

The author has abundantly shown the value of this information, and we cannot help feel that, for the first time, this important subject has been satisfactorily dealt with. The book is distinctly one worth having.

BOOKS RECEIVED.

State Board of Health of Massachusetts. Thirty-fourth Annual Report. 8vo, 623 pages. Massachusetts Board of Health.

Atlas Med. Grundriss der Hautkrankheiten. By Dr. Franz Mracek. 12mo, 115 plates, 284 pages. J. Lehmann, Munich.

Contributions from the Wm. Pepper Laboratory of Clinical Medicine. 8vo, 175 pages. Illustrated University of Pennsylvania.

Elements of Water Bacteriology. By Drs. S. C. Prescott and C. A. Winslow. 12mo, 162 pages. Illustrated. John Wiley & Sons, New York.

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ORIGINAL ARTICLES.

HEPATOPTOSIS COMPLICATED BY GASTROPTOSIS; A SUGGESTION AS TO TREATMENT.

BY ELLSWORTH ELIOT, JR., M.D.,
OF NEW YORK.

THE movement manifested by the various abdominal viscera may be either physiological or pathological. In the former instance, the degree of movement varies widely, being most pronounced in the hollow viscera, particularly in the alimentary canal, where it contributes largely to the proper performance of the functions of digestion and assimilation; it is least marked in the solid viscera where the movement referred to is largely respiratory, being due to the descent of the diaphragm.

In the hollow viscera the range of movement depends almost entirely upon the peritoneal relations of each individual organ, being most extensive in those organs supplied by a generous mesentery. On the other hand, in the solid viscera, the comparatively slight range of movement is explained by the absence of such a mesentery, as well as by the attachment of the viscus, at a point where it is not covered by peritoneum to the contiguous portion of the abdominal wall. Even in such an organ as the spleen, which is completely invested by peritoneum and is supplied by a mesentery, nature has evidently intended to curtail its movement, certainly in a downward direction, through the medium of the costocolic ligament.

The exercise of this movement, whether of hollow or solid viscus, does not affect the normal relation of the organ to the abdominal wall or to the contiguous viscera. At the conclusion of such a movement the quiescent viscus returns to that position in the abdominal cavity in which it properly belongs. On the other hand, when for any reason the normal relation is disturbed, such restitution may prove impossible, and the viscus once displaced may occupy an increasingly lower position in the abdominal cavity.

Such a condition may be due to various causes. In the first place, abnormal elongation of mesenteric attachment may occur, whenever, for any reason, the abdominal walls are unduly stretched, as in pregnancy, a fact which accounts for the prevalency of this condition in women.

Secondly, such abnormal range of movement and displacement may be due to the development of weakness in the extraperitoneal attachment of the viscus to the abdominal wall. Thus, in the case of the liver, the gradual diminution in the fatty tissue between the layers of the coronary ligament or in the case of the kidney, a similar decrease in the amount of perinephritic fat, predispose to downward displacement of these viscera.

Thirdly, a lack of tone in the viscus itself. This refers particularly to the hollow viscera. Here, when for any reason, the muscular tone of the affected organ becomes depreciated, either through disturbance of the general nutrition or from some irregularity in its nervous mechanism, a permanent displacement may occur.

Fourthly, gravity is a most potent factor in leading to displacement only when combined with one or more of the previous conditions. Under these circumstances an existing displacement is materially aggravated.

Such displacement may be limited to one organ or involve several simultaneously. Occasionally there is a general enteroptosis. In these cases weakness of the diaphragmatic attachment of the liver develops, and the consequent descent of that relatively heavy organ necessarily causes a downward displacement of all the abdominal viscera. It is not at all unlikely, that with the correction of the malposition of the liver the organs affected by its displacement, especially the right kidney and the stomach, right themselves without further treatment.

The symptoms associated with displacement of one or more viscera are very variable and may be divided into two general groups: (1) Those referable to the displacement of the individual viscus; (2) those of a reflex nature due to interference with the proper working of the abdominal nervous system. The former, not infrequently, absent, consist of local pain, together with symptoms indicating interference with the proper working of the organ involved. Thus, in case of the liver, attacks not unlike those of a typical biliary colic may occur, with or without moderate jaundice. In the stomach, nausea, loss of appetite, vomiting, evidences of defective gastric digestion with marked gastralgia very frequently develop. On the other hand, with the displacement of the kidney, symptoms due to the functional disturbance of that organ occur only when, from its malposition, mechanical interference with the outflow of urine results in intermittent hydronephrosis.

The latter group of symptoms, namely those due to reflex nervous disturbance, are usually well developed. The frequent occurrence of these symptoms in displacement of the uterus is very generally recognized. Similar symptoms of even more pronounced character and of wider distribution may be expected to occur in displacement of the abdominal viscera, for a larger number of nervous ganglia are affected, both by the pressure of the displaced organ and the tension to which the displacement subjects them.

The individual symptoms of this group are so well known that they require no special mention.

The objective symptoms may be elicited by direct examination. Thus the lower edge of the liver may be felt to extend a variable distance below the free border of the costal arch. The downward displacement of the stomach may be mapped out by percussion, after it has been inflated or partially distended with fluid. Analysis of stomach contents also gives valuable information. In nephroptosis, the kidney is readily felt by bimanual palpation, and the degree of excursion of its abnormal movement easily determined. The displacement of the solid viscera can always be recognized with greater facility after the patient has been walking, than if the patient has for some time previously been in the recumbent position.

The treatment is prophylactic and curative.

Prophylactic treatment includes all measures calculated to maintain the tonicity of both the abdominal wall and the abdominal viscera. Among the most important may be mentioned regular and suitable exercise, careful attention to the functions of digestion and assimilation, and in general the observing of a well-regulated hygienic habit of life. In women especially, where the persistence of weakness of the visceral ligaments after pregnancy is a part of a general subinvolution, should these precautions be observed.

The curative treatment is both medical and surgical. Medical treatment consists in the application of the general principles just enumerated together with local treatment directed to the displaced viscus. In case of displacement of the stomach, lavage, electricity with small doses of strychnine and arsenic to improve the tone of its muscle wall, are most likely to prove of service when that organ only is involved, and when the liver maintains its proper relation to the diaphragm. Similarly with the kidney, the generous exhibition of fats both in diet and by the administration of cod-liver oil may afford relief by increasing the general strength, as well as the strength of the fatty capsule of the affected organ. Again, however, the chances of a permanent cure are slight, if displacement of the liver exist, for the upper pole of the right kidney (the one usually affected) is in contact with the under surface of the liver, and any movement downward of that viscus must necessarily be transmitted to the kidney beneath. The descent of the kidney in these subjects may occasionally be checked by the wearing of a well-fitting pad.

In all these cases, particularly when nervous symptoms develop, general benefit is derived by continued rest in bed. By this means, gravity as an etiological factor, is eliminated, or may be even utilized to effect the return of the displaced organ to its proper position by raising the foot of the bed. This is especially true of the solid viscera. With the recovery of the patient recurrence is less likely if some occupation is selected that does not necessitate continued and protracted standing in the same position.

The surgical treatment varies according to the organ affected. The object of this paper is to call attention to a new method of operation in those cases where, with gastroptosis, there is a descent of the liver as well. Hitherto, with or without this complication, attempts have been made to relieve the gastroptosis by suture of the stomach to the anterior parietal peritoneum, and in a few cases by a reefing or shortening of the gastrohepatic omentum—attempts that have resulted in no material benefit to the patient. The chief objection to either of these methods seems to be that, when the liver descends, the weight of that organ continues to be exerted against the stomach and thereby interferes with its function as well as the function of the other viscera that are pressed down into the abdominal cavity. The object of the operation here suggested, is to anchor the liver so securely in its position that the displaced stomach and other abdominal viscera will be relieved of its superincumbent weight, and will then with or without general therapeutic measures return more or less completely to their normal position, with a corresponding improvement in their function.

The operation consists in the exposure of the liver and stomach through a median incision above the umbilicus. The obliterated umbilical vein, forming a thick cord in the free edge of the falciform ligament, is then identified and drawn forward until it comes in contact with the parietal peritoneum. The hepatic extremity of the ligament then rests against the under surface of the right lobe of the liver in front of the transverse fissure. The lower or umbilical extremity is in close contact with the anterior parietal peritoneum, the two portions of the ligament now forming a right angle. In this position the round ligament is sutured to the anterior parietal peritoneum with chromic gut and the redundant falciform peritoneal reflection is spread out laterally and sutured to the contiguous portion of the parietal peritoneum with the same material, in this way forming a species of shelf for the under surface of the liver. The abdominal wound is then closed in layers.

REPORT OF CASES.

Case I.—M. L., female. Admitted to the Presbyterian Hospital, March 23, 1904. Patient has always enjoyed good health until four weeks previously. At that time, without known cause, she developed pain in the epigastrium which was more marked on the right side, and which confined her to bed for one week. Ten days previous to admission the pain recurred and increased in severity, being especially severe for the past two days, and of a sharp, knife-like character. Four days before vomiting appeared, the vomitus consisting of the contents of the stomach, and after that the patient was unable to retain food of any kind. During this same time the bowels were

constipated. Two days previous patient became feverish and simultaneously jaundice appeared. On both days chills occurred. On admission, temperature was 104° F., the pulse 110. Shortly after admission the patient developed a severe chill, the temperature rising to 107° F., the pulse to 120.

On examination, the abdomen was flaccid and moderate tenderness and rigidity were elicited in the upper right quadrant near the border of the costal arch. There was also some rigidity of the corresponding portion of the arch. Extending a distance of two inches below the level of the umbilicus, the free edge of the right lobe of the liver could be felt. The urine was normal, save for a heavy trace of bile. There was a considerable amount of jaundice. There was a leucocytosis of 15,000, gradually decreasing and reaching normal at the end of a week, also a slight pharyngeal cough with a moderate whitish expectoration.

On the day of admission patient vomited after taking a little water, which was repeated later in the evening. On the day after admission, the temperature fell to 103.5° F., thereafter decreasing gradually day by day, reaching normal in about ten days. An enema was administered with a large brown result. There was no further vomiting.

Five days after admission, patient had a severe attack of tachycardia, the pulse reaching 250 (counted with the stethoscope over the apex), decreasing the following morning to 180 (with the administration of digitalis) and thereafter decreasing to normal. There was no corresponding rise in the temperature. With the subsidence of the attack of tachycardia, the general condition of the patient improved. The appetite improved, the bowels became less constipated, the jaundice decreased and then disappeared, and by successive examinations the edge of the liver was felt to rise above the level of the umbilicus, to a distance of about two inches below the costal arch. At the end of three weeks, the patient was allowed to sit up in a chair and shortly after to walk. A few days thereafter she was discharged from the hospital.

The patient has been examined at intervals of two weeks since her discharge. She has been able to do light housework and there has been no recurrence of any of her former symptoms. The edge of her liver has, however, returned to a position below the level of the umbilicus.

Case II.—M. P., forty-one years old, female. Admitted to the Presbyterian Hospital November 30, 1903. Patient has had three children and three miscarriages, the youngest child being now eight years old. Has always enjoyed excellent health. One year ago pain developed on the right side of the abdomen. This was increased on exertion and at times extended down the right leg, being so severe as to confine the patient to bed. For the last three months patient was unable to attend to household duties, and for the past six weeks vomiting after eating was frequent, intensifying the pain. During the same time she suffered from severe abdominal cramps with distention and has been unable to sleep. During the previous three months she lost much strength and forty-two pounds in weight. The chief complaints were pain, vomiting and general weakness.

Examination.—The abdomen was of average size, soft, of poor general tone and moderately distended. Stomach tympany extended below to within one and one-half inches of the crest of the ilium, crossing the median line one inch below the umbilicus, and the free border of the costal cartilage at the tenth rib. The lesser curvature crossed the epigastrium one inch below the ensiform and extended as high as the seventh rib in the left hypochondrium. The liver descended in the right hypochondrium a distance of two inches below the free border of the costal arch. A peristaltic wave could be seen at intervals passing from left to right just below the umbilicus. The stomach contained free hydrochloric acid both before and after operation. Prior to operation, examination of stomach contents showed many starch granules, fat globules, granular detritus and epithelial cells.

December 9.—Patient has been in bed since admission, with lavage and general tonic treatment without showing any improvement.

Operation. Gas and ether.—On opening the abdominal cavity, the liver was found to extend two inches below the free border of the costal arch, the greater curvature of the stomach to lie opposite the level of the umbilicus, the stomach itself to be moderately dilated. The stomach was sutured to the anterior parietal peritoneum on either side of the median line with two rows of chromic gut sutures, and after denudation of the opposed peritoneal surfaces of the liver and diaphragm, the round ligament was treated in the manner described in the earlier part of this paper. Complete closure of the abdominal wound followed.

There was very slight reaction, the wound running the ordinary course of those which heal primarily. The amount of postoperative vomiting was no more than that observed in the usual laparotomy. By the seventh day all discomfort after eating had disappeared, and the patient experienced no further abdominal pain or cramps. There was progressive improvement, and she was discharged at the end of four weeks, after she had been walking around the ward for a week without any return of her symptoms. To permit of the approximation of the denuded liver and diaphragmatic surfaces, the patient was kept in the Trendelenburg position for two weeks after the operation. Two months after operation patient had been attending to her household duties for some weeks. She experienced occasional slight pain after eating. She gained ten pounds after her discharge from the hospital. Six months after operation, the patient was mak-

ing daily trips of more than six miles between her residence and place of business. She continued to enjoy good health.

Case III.—M. K., thirty-eight years old, female. Admitted to the Presbyterian Hospital December 7, 1903. Patient had had two pregnancies, nine and seven years before. Eighteen years previously she had an attack of severe pain in the epigastrium, with jaundice, confining her to bed for three weeks. A similar attack occurred three years before admission with severe pain in the right hypochondrium, and vomiting. The jaundice persisted for a month. In November, 1900, a ventral fixation was performed by me at the Presbyterian Hospital. At that time there was retroflexion and some menstrual difficulty, which was relieved by the operation. April, 1903, the patient had an attack of fainting, with chills and fever, and severe pain in the back, but no vomiting or jaundice. Since then she has had frequent attacks of fainting, with abdominal pain, experienced after eating, and occasional jaundice. For several months past she has been unable to do any heavy work.

On examination, the wall of the abdomen was soft and retracted. The lower border of the liver could be felt two inches below the free costal margin. On bimanual examination, in the right lumbar region, the right kidney could be felt to be slightly movable.

Operation. Gas and ether.—On opening the abdominal cavity, the transverse fissure of the liver was found to be in close contact with the lesser curvature of the stomach. The greater curvature was opposite the umbilicus. The right kidney enjoyed an excursion of two inches during inspiration. The gall-bladder and ducts were normal. The liver was raised a distance of two inches by suture of the round ligament, and the abdominal wound was closed after denudation of the opposed peritoneal surfaces of the diaphragm and liver. Trendelenburg position.

There was no unusual nausea or vomiting. The bowels moved on the third day. The pain decreased and disappeared with steady improvement of the appetite. At the tenth day, slight pain in the back alone remained. The patient continued to improve and left the hospital in excellent condition. Six months after the operation, patient enjoyed very good health. There was occasional pain after eating and some obscure pain low down in the pelvis, but her general condition remained greatly improved.

These cases are of very considerable interest. In the first case, no operation was performed, the patient having always been well to within a short time of the original attack. Here conservative measures proved successful in relieving the attack, notwithstanding a very severe and unusual attack of tachycardia. It is interesting to note that, shortly after she had assumed the vertical position, the liver returned to the position that it occupied at the time of the patient's admission to the hospital and that this occurred without any return of the previous symptoms. Whether a relapse will occur or not is purely a matter of conjecture. Too short a time has elapsed to regard the patient as permanently cured.

In the second case the stomach symptoms were very sharply developed and the resulting loss of flesh and strength were as great as in any case of carcinoma. The patient desired to avoid an operation if possible, yet her condition became so deplorable, that finally she was eager for any procedure that might afford relief. The good effect of the operation might be said to have been almost instantaneons. After the subsidence of the discomfort that is observed after any laparotomy, she experienced almost complete relief and began to relish and assimilate food in considerable quantities. Whether in this case, the good result can be ascribed to the suture of the stomach or to the elevation of the liver, or simply to the rest in bed, is a matter of doubt. The total failure of gastrorrhaphy to afford even temporary relief in other cases of this description, together with the sudden change directly after the operation, when a week's rest in bed prior to the operation had not materially changed the patient's condition, seem to warrant the belief that the shortening of the round ligament was instrumental in effecting the noted improvement. In the third case, the symptoms rather pointed to some form of cholelithiasis, but the physical examination of the liver revealed its low position and the laparotomy made the diagnosis certain. Again, in this instance, the result at the expiration of six months may be regarded as satisfactory. It is also interesting to note, in this case, the examination of the uterus showed it to be firmly secured to the anterior abdominal wall by a mesial and anterior ligament about two inches square, the result of the prior ventral fixation.

In conclusion, the writer does not desire to belittle the importance of medical measures. These should be always carried out wherever it is possible, and only when the condition of the patient ceases to improve is it wise to resort to surgical treatment. The writer wishes also to still further emphasize the fact, that the method suggested must not be expected to afford relief in all cases and that the results in the cases herewith published six months after operation must not be regarded as final. The fact remains, however, that a very marked improvement was secured in the two cases treated by this method, and this improvement seems to warrant the early publication of this paper in order that others may be induced to try the same procedure. For it is only by that means that an accurate estimate of its true value can be obtained.

48 West Thirty-sixth Street.

Gifts to Mineola Hospital.—It has just been announced that Mrs. W. K. Vanderbilt, Jr., has given to the Hospital Association of the above institution $2,000, to be used for repairs. Mr. W. B. Leeds, another friend of the hospital, also recently gave $2,000.

RACES AND PEOPLES WITH REGARD TO TUBERCULOSIS.

BY JOHN B. HUBER, A.M., M.D.,
OF NEW YORK.

THE negro is exceedingly prone to consumption, which destroys every other adult among his people. It would seem, however, that this disease was unknown among the original blacks in Africa until within comparatively recent generations, when the exploring whites decided to confer upon them certain prearranged blessings of civilization. Their immunity was probably due to the fact that barbarism does not suffer the disadvantages of badly-ventilated, badly-drained houses, indoor life, factory work and like conditions of civilization upon which tuberculosis thrives.

Harris (*Journal American Medical Association*, October 3, 1903) declares that before the Civil War tuberculosis was almost unknown among the slaves; that it does not occur on the West Coast of Africa, except when it has been imported by the white race and acquired by the negroes living a semi-civilized life. Millard states: "I have excellent authority for saying that the disease is rare among the negroes in Africa, and in the interior is almost never known." Flick considers that the negro race in Africa was free from consumption until its members began to associate with other races.

No doubt tuberculosis has taken the same course among the negroes as did measles among the Fijis. Measles were entirely unknown among these people until some whites who came there introduced it. On account of this, the aboriginal inhabitants died off in enormous numbers of this disease, which is now comparatively innocuous among us—40,000 Fijis in a population of 150,000. This exemplifies the established fact that a given infection acquires an unusual malignancy when for the first time it invades a race previously immune. On the other hand, an infection tends to lose its virulence in the course of centuries, as with the Jews, who are singularly less prone than other races to tuberculosis (Billings, Korosi, Fishberg, Hoffman).

Flick considers that the history of consumption in all new countries into which it has been introduced, shows that it has had a rise, a climax and a decline in prevalency, citing the experience in the islands of Madeira and Bermuda, and the progress of the disease from east to west in the United States in illustration of his view. In New York City, from 1804 to 1820, the deaths from consumption were one in 4.2; from 1820 to 1835, one in 5.4; from 1835 to 1850, one in 6.5, and from 1848 to 1859, one in 8.4. In Rhode Island the percentage of deaths from consumption was in 1867, 20.74; in 1883, 15.03. The mortality statistics of the older States and cities show in the same way a progressive decrease; those of the newer States and the Territories show either a standstill or a decrease. "The avidity, however, with which the disease takes hold of new material illustrates its subservience to the law of acclimatization better even than its history in different countries. "It has decimated," declares Flick, "the natives of probably every island which has been colonized by England during the last few hundred years." The native-born African negroes have thus suffered terribly from it. In Egypt the negroes and Abyssinians are decimated by it. In Gibraltar, for twenty years the comparative deaths between whites and blacks have been, per 1,000: Whites, 6.1; blacks, 33.5. During the early American slave trade the proneness of the negro to consumption was noted by Rush and others.

Certain habits of the negro are certainly predisposing. I have been informed by our Consul at Nassau (New Providence) that it is a custom among the negroes in that region, no matter how hot the nights might be, to keep the doors and windows of their huts tightly closed, and to burn lamps or candles throughout the night, to keep the evil spirits out and to scare them away. Such superstitions as these are common also, I believe, among negroes in our Southern States. The negro, moreover, eats much pork, and swine are among the tuberculous animals. To say the least, this is an unhygienic diet for hot regions. The negro is said to be inordinately addicted to alcoholism; if so, this factor should predispose more than among the whites, for the same reason that obtains among the Indians, to whom we will presently refer.

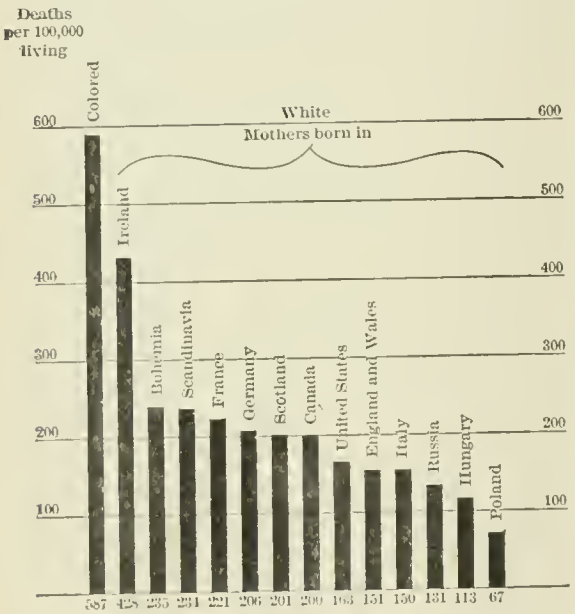
Coleman declares the negro to be ignorant of hygiene and adverse to water; that his food is often insufficient and unwholesome, and unsuited to the climate in which he lives; his clothing is unhealthful; he is shiftless and improvident. Syphilis and gonorrhea, by weakening his system, render him susceptible to tuberculosis. Many a negro now works indoors, and the houses in which he lives are overcrowded—unfortunate conditions, since the tendency of his race has been agricultural and toward out-of-door life.

Harris considers that the negro's small lung capacity, as compared with that of the white, and his deficient brain capacity render him less resistant to the disease when once acquired. Where the two races live together, three times as many negroes as whites die from tuberculosis. And Harris and Coleman both conclude that unless the hygienic and moral surroundings of the race are improved, there is danger of extinction.

It seems that the Indian was free from tuberculosis before his contact with the whites, living as he did in the open air and without alcohol. The "fire water" introduced by the white man (a most vicious, impure, cheap and harmful form of alcohol) has certainly been a large factor, all the more for the reason that the whites have, through many previous centuries, rendered themselves comparatively seasoned with regard to this stimulant, to which the Indian has not yet accustomed himself.

Rush stated, more than a century ago, that consumption was then unknown among the Indians of North America. Flick considers that prior to the advent of the white man—and especially the Englishman—consumption did not exist among the American Indians. Whenever England colonized the Indians took the disease, so that in the course of time it became even more prevalent among them than among the whites. The disease increased from east to west. John D. Hunter, Esq., who was for fifteen years a captive among the Indians, wrote in 1822: "I have known pulmonary consumption to occur among the Indians. It is rarely seen, however, except in those who are addicted to intemperance, and even in those cases it is by no means as common as among the whites. It is worthy of notice that their females are not as much subject to the disease as the males are."

In 1854 George B. Buckley reported that In-



dians east of the Rockies suffer from inflammation of the eyes and consumption. In 1870 Dr. Thomas Williams wrote of the Dacotas, of Minnesota, that "of those over ten years who die of disease, I think one-half die of consumption." It has almost exterminated some American tribes.

The death rate from consumption among Chinese in this country is, I believe, very high indeed. As regards New York City, their dreadfully unhygienic living, their sleeping in bunks, in vitiated atmospheres, their overcrowding, their addiction to opium and other enervating vices, and like circumstances abundantly explain their high mortality from tuberculosis.

Miss Lillian Brandt, to whom I am indebted for the accompanying diagram, has supplied some interesting data in the "Handbook on the Prevention of Consumption" of the Charity Organization Society. The high mortality among the Irish people is no doubt due to the inordinate alcoholism which obtains among their poor, their careless, improvident nature, their inheritance of poverty through many generations, and the overcrowding among them in our tenements.

The Bohemians come next, though a long way behind; their habit of congregating in cities, their unhealthful housing conditions, and their indoor occupations explain their mortality rate.

The Scandinavians are reputed a healthy race, and so no doubt they are at home. However the effect of new climatic conditions upon them, and the formation of a radically different physical type in the second generation may account for their comparatively high mortality in this country. Until we reach the Italians the conditions are such as prevail in civilization generally, and no observations are strictly pertinent in this place.

We would expect a higher mortality among the Italians, for their indoor life in this city is very unhealthful, they are exceedingly dirty and they are said to be much underfed. Moreover, being an ignorant and superstitious people, and no doubt fearing often the imaginary terrors connoted by registration, they are given to concealing their cases; so that by no means all are reported. This observation probably applies to many of the fifty odd tongues represented in New York City. Many Italians want to die in their fatherland; so that many cases no doubt leave for home before they become very bad indeed. Many poor Italians work in this country during the summer months and return to Italy in the fall. There are, for instance, many such transported in the steerage of the Netherlands-American steamship line. Besides the Italian's nature is sunny, not given to worry, and these people are largely engaged in outdoor work, peddling and upon public roads, etc.

The Hungarians, the Russians and the Poles in New York are mostly Jews. We observe that these peoples have the lowest death rate. It would seem that the Jewish race, here as elsewhere, suffers less from consumption than any other, except perhaps the Quakers. And this is all the more strange, because the Jewish race, in New York City at least, seems to be subject to pretty nearly every possible condition conducive to tuberculosis. I would attribute their low death rate, in large measure, to three main factors:

They are said to be a temperate people with regard to alcohol, which they take in moderation. The Jews are seldom drunk; "they have no drink problem." Again it would seem that the Jewish race has in the forty centuries of its existence established for itself a comparative immunity to this disease.

And lastly, there is their obedience to the Mosaic Laws regarding kosher food, which laws are, I understand, very faithfully obeyed by the poor Jews. The Jew would thus be not so likely to consume tuberculous food stuffs.

THE CONSUMPTION AND ELIMINATION OF WATER IN DRY AND MOIST CLIMATES, WITH SPECIAL REFERENCE TO THE CAUSE OF BRIGHT'S DISEASE.[1]

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FOR a considerable time it has been felt by the physicians and people of Galveston that Bright's disease is more prevalent in this city than in most communities. The reports of the John Sealy Hospital of Galveston do not show the proportion of cases of Bright's disease in the medical wards, to be any greater than in the hospitals of other cities. A comparison of the mortality statistics, however, shows that there are more deaths from Bright's disease in proportion to the total number of deaths than in most cities, in spite of the fact that the mortality rate (per thousand of population) is remarkably low. With the exception of New York City, the percentage of deaths from this cause is nearly double that of most of the large cities in various parts of the country.

This condition is commonly attributed to climatic conditions—to the high degree of relative humidity, together with the long season of warm weather. Different theories have been advanced to explain how these conditions could possibly produce disease of the kidneys. Some contend that this atmospheric condition interferes with evaporation from the skin and throws greater work upon the kidneys; others hold that in the effort at heat regulation the sweat glands are more active, resulting in a concentration of the urine, which causes irritation of the kidneys and possibly interferes with renal excretion.

The observations presented in this paper were undertaken with the object of determining the influence of dry and moist climates upon the amount of water consumed, and the amount given off as urine, and whether or not there is any relation between the prevalence of Bright's disease and the climatic conditions.

The first observations were made by the writer upon himself over a period of six days in Boulder, Colorado, at an altitude of 5,400 feet above sea level, and these were contrasted with similar observations in Galveston at the sea level. The former observations were made in July; the latter in September. While the weather was a little warmer during the series in Galveston, the difference of temperature was not so great as the difference in humidity. No effort was made to take fluid at regular intervals or to take a uniform diet, but the natural inclinations were followed in this regard and the amount of fluid taken as a drink recorded. These were not added up until after the series was completed so that no mental factor could enter into the results in any way.

TABLE I.

Observations in Boulder, Colorado, July 17 to 22. Altitude 5,400 feet.

Number and date of observation.	Dry bulb thermometer, Fahrenheit.	Wet bulb thermometer, Fahrenheit.	Dew point.	Relative humidity (per cent.).	Barometric pressure (mm. Hg).	Amount of water as drink in c.c.	Amount of urine in c.c.	Sensible perspiration.	REMARKS.
I									
July 17, 1899..	72.5°	65.5°	60°	65.5	615	1550	1350	Slight.	Three-quarter hour active exercise in walking.
II									
July 18, ...	69.3°	62.5°	57.3°	65.6	616	1950	1750	Slight.	Two hours walking.
III								Some during exercise.	One hour active exercise in bicycle riding.
July 19, ...	74°	61°	52°	41.2	614	2100	1550		One-half hour bicycle ride.
IV									
July 20, ...	75.5°	61.5°	51.5°	43.2	611	1950	1325	Some.	One hour in walking. Weather clear and pleasant as in Observations III and IV.
V									
July 21, ...	.....	....	....	....	...	2000	1225	None.	
VI									
July 22, ...	76.5°	63.5°	54°	45.5	613	2100	1225	Slight.	.....
					Average	1940	1404		

The conditions were very similar in regard to exercise, etc. Coffee was taken once a day, with breakfast—an average of 165 c.c. in Boulder and 300 c.c. in Galveston. If the difference in the amount of coffee consumed had any effect, it should have caused greater activity of the kidneys during the series of observations in Galveston. By strange coincidence the average of the six days in Boulder and that of the nine days in Galveston, show that exactly the same amount of urine (1,404 c.c.) was passed in both series. The average daily amount of water taken as drink was 2,140 c.c. in Galveston, while that in Boulder was 1,940. This means that the moisture given off by the lungs and skin in the moist climate exceeded that given off in this way in a dry climate by 200 c.c. From September 18 to 24, there was a Texas "norther," *i.e.* cool, dry breezes from the north prevailed and there was very little sensible perspiration as the weather

[1] Read before the Section on Pathology of the Texas State Medical Association, April 30, 1904.

was pleasant. During this time there was little difference between the water consumption and elimination in Galveston, as compared with that in Boulder. During the first and last days of the obesrvations in Galveston the weather was hot, sultry and uncomfortable, causing considerable sensible perspiration, and during these days more water was consumed and less was given off in the urine.

The observations of temperature, pressure and humidity were made in the middle of the forenoon and in the middle of the afternoon in the series in Boulder, and a mean of these is given in the table. Similar observations were made every three hours from 8 A.M. to 11 P.M. in the Galveston series, and an average of these is given in the tabulation.

These observations are open to the objections (1) that they were made upon a single individual, and (2) that there was not only a difference of humidity, but also a vast difference in atmospheric pressure, as Boulder is nearly one mile above sea-level, and the latter might influence the circulation and possibly metabolism. To overcome these objections arrangements were made to carry on observations simultaneously upon three men in good health in San Antonio, and also upon three healthy adults, besides the writer, in Galveston. These were made in September, 1903, and to compare the climatic conditions the officials of the United States Weather Bureau at both of the stations have very kindly furnished three daily observations as to temperature and humidity during this period. San Antonio is only about 700 feet above sea-level, and in general it may be said there is little difference in

Table II.

Observation in Galveston, Texas, at Sea-Level. September, 17 to 25.

Number and date of observation.	Dry bulb thermometer. Fahrenheit.	Wet bulb thermometer. Fahrenheit.	Dew point. Fahrenheit.	Relative humidity (per cent.).	Barometric pressure in mm.	Fluid as drink in c.c.	Amount of urine in c.c.	Specific gravity.	Sensible perspiration.	Active exercise.	Remarks.
VII September 17..	86.3°	78.6°	73.6°	66	759	2550	850	1031	Large amount.	One-half hour bicycle ride.	Weather hot, sultry and uncomfortable.
VIII September 18..	78.5°	73.5°	70°	76	759	2000	1825	1015	Some.	One-half hour walking.	Weather pleasant. "Norther" during night.
IX September 19..	77°	68.3°	62°	60	761	1900	1700	1012	None.	One-half hour bicycle ride.	Weather cool and pleasant.
X September 20..	77°	66.7°	59°	54	763	2100	1050	1021	Very little during exercise.	.....	Weather remains the same.
XI September 21..	78°	66°	57°	50	765	2050	1435	1018	.....	.....	Weather remains cool and pleasant.
XII September 22..	78°	66.7°	59°	52	764	2700	1950	1012	Very little.	One hour bicycle ride.	Weather pleasant.
XIII September 23..	78.3°	69.4°	63°	60	764	2000	1550	1013	Some during exercise.	One hour bicycle ride.	Weather pleasant.
XIV September 24..	81°	71.3°	65°	57	761	1950	1500	1012	Very little.	.....	Weather seems warmer but not unpleasant.
XV September 25..	79°	68°	60°	53	766	2000	775	....	Considerable.	One-half hour bicycle ride.	Weather warm and sultry.
				Average		2140	1404				

Table III.

Observations on Different Individuals in Galveston, September, 1903.

	I.		II.		III.		IV.	
	Urine in c.c.	Drink in c.c.	Urine in c.c.	Drink in c.c.	Urine in c.c.	Drink in c.c.	Urine in c.c.	Drink in c.c.
September 15 to 16.....	950	3150	1300	2375	475	2550	....	....
September 16 to 17.....	900	2450	1350	1750	500	1215	1025	2250
September 17 to 18.....	1275	2225	1375	2100	875	1925	560	1650
September 18 to 19.....	1150	1800	1200	1975	925	1875	830	1600
September 19 to 20.....	1300	3050	2375	1875	705	1775	1100	1650
September 20 to 21.....	950	2760	1325	1875	815	1950	900	1600
September 21 to 22.....	930	3150	1150	2500	615	2725	750	1950
September 22 to 23.....	1175	2850	700	2700	650	1900	1375	1600
September 23 to 24.....	1150	3000	700	1400	...	2200	800	2150
September 24 to 25.....	1050	2150	975	1900	725	1775	750	1750
September 25 to 26.....	875	2150	....	....	675	1875	....	....
Average.....	1064	2616	1245	2045	696	1956	899	1800

the mean temperature of these two cities. The chief difference is in the relative humidity and this is most marked at noon and in the evening. There is also a much greater difference between the maximum and the minimum temperatures in San Antonio than in Galveston.

As in the first series no effort was made to use a uniform diet or to take fluid at regular intervals, but the natural inclinations were followed and all fluid taken as drink was recorded. As the object of the observations was unknown to the physicians and pharmacists who kindly assisted me in making these observations, it can be said that the results were not affected in any way by any mental influence.

The subjoined tables show the climatic conditions and the amount of water consumed as drink and eliminated in the urine. The urine was collected for the day (7 A.M. to 7 P.M.) and night (7 P.M. to 7 A.M.) separately, and the specific gravity of the urine was taken in each case, but these details do not bear upon the results. The amount of urine passed during the day as compared with the amount passed during the night varies with different individuals but on the average the former only exceeded the latter by 30 c.c., notwithstanding the fact that the amount of water consumed during the day was from two to ten times greater than the amount of fluid taken as drink during the night period. On the average the specific gravity of the urine was the same for these two periods. It is evident that the excessive amount of water consumed during the day is given off by the skin.

A comparison of the average for seven days (September 15 to 21) shows that the average daily amount of fluid consumed in San Antonio was 1,734 c.c., and the average amount of urine given off was 1,218 c.c. The averages in Galveston for the same period were 2,126 c.c. of water as drink, and 1,016 c.c. of urine. The observations were continued for eleven days in Galveston, and an average for this period gives 2,140 c.c. of drink and 976 c.c. of urine.

These results show that the average daily amount of fluid consumed in Galveston was approximately 400 c.c. greater than that taken in San Antonio, while the quantity of urine was approximately 200 c.c. or 240 c.c. less. The use of coffee did not cause this difference, for more coffee was consumed by those in Galveston than by those in San Antonio. The average daily amount of coffee consumed was as follows: In Galveston, I. 320 c.c.; II, 310 c.c.; III, 380 c.c.; IV, 150 c.c. In San Antonio, A, none; B, 380 c.c.; C, 200 c.c. If the diuretic action of the coffee vitiated the results at all it was by giving too high an average for the daily amount of urine in the Galveston series.

These results confirm the first series of obser-

TABLE IV.

Observation in San Antonio, Texas. September 15 to 22, 1903.

	A		B		C	
	Urine in c.c.	Drink in c.c.	Urine in c.c.	Drink in c.c.	Urine in c.c.	Drink in c.c.
September 15 to 16	1900	2500	1250	2295	1225	2225
September 16 to 17	1450	1400	1400	1650	1535	1050
September 17 to 18	1450	1300	1300	1500	815	1925
September 18 to 19	1400	1675	900	1900	900*	650*
September 19 to 20	1400	1675	800	1100	400*	625*
September 20 to 21	1100	1600	1100	2150	700*	1825*
September 21 to 22	1000	1200	800	2350	425*	1885*
Average	1385	1621	1078	1849	1191	1733

*Sick with dengue; took purgatives; watery stools.

Average for first three days.

TABLE V.

	Temperature.						Humidity.					
	San Antonio.			Galveston.			San Antonio.			Galveston.		
	Max.	Min.	Mean.	Max.	Min.	Mean.	7 A.M.	12 Noon.	7 P.M.	7 A.M.	12 Noon.	7 P.M.
September 15	92	72	82	88	81	84	..	..	..	77	..	76
September 16	79	59	69	87	67	77	88	71	78	89	..	98
September 17	77	56	66	75	60	68	60	38	30	90	..	39
September 18	80	50	65	73	65	69	66	27	34	67	52	49
September 19	82	56	69	77	68	72	81	52	50	59	54	51
September 20	84	60	72	78	71	74	89	54	48	54	60	61
September 21	86	61	74	80	69	74	89	54	50	85	54	64
September 22	86	65	76	82	72	77	91	50	46	86	55	57
September 23	89	61	75	85	72	78	..	..	..	78	46	43
September 24	90	66	78	82	72	77	..	..	..	65	44	57
September 25	..	..	..	82	71	76	..	..	..	81	64	59
September 26	..	..	..	85	78	82	..	..	..	63	59	70

vations, and seem to justify *the conclusion that one takes more fluid as drink in a moist climate and passes less urine than in a dry climate.* Probably the amount of moisture given off by the skin and the lungs in dry climates is not so great as is often thought. The sensible perspiration which results from the effort at heat regulation on the part of the animal economy in a hot, moist climate, probably accounts for this difference.

TABLE VI.

Summary.	Drink.	Urine.
Average for six days in Colorado in July, 1899	1941	1404
Average for nine days in Galveston in September, 1899	2139	1404
Averages in San Antonio:		
A—Seven days, September 15 to 21, 1903, inclusive	1621	1385
B—Seven days, September 15 to 21, 1903, inclusive	1849	1078
C—Three days, September 15 to 18, 1903, inclusive	1733	1191
Mean Average	1734	1218
Average in Galveston:		
I—Average for eleven days, September 15 to 26, 1903, inclusive	2316	1064
II—Average for eleven days, September 15 to 26, 1903, inclusive	2045	1245
III—Average for eleven days, September 15 to 26, 1903, inclusive	1956	696
IV—Average for eleven days, September 15 to 26, 1903, inclusive	1800	899
Mean average	2104	976
Average for seven days, September 15 to 22, 1903, inclusive, in Galveston.		
I	2655	1065
II	2064	1439
III	2002	701
IV	1783	861
Mean average for seven days during which observations were going on in San Antonio	2126	1016

The important question now arises, Has this anything to do with the causation of Bright's disease? This question cannot be answered by general impressions, or by comparing small numbers. Below will be found a comparison of the mortality records of different cities for the year 1900, taken from the United States Census Report, and of the climatic conditions, taken from the reports of the United States Weather Bureau. The percentage of relative humidity for the summer months is the average for the years 1900, 1901 and 1902. The temperature is the "normal temperature" for these cities and represents the average for about twenty years. The humidity of Galveston and San Antonio is also the average for sixteen or more years.

In the case of Galveston the total number of deaths from all causes and the proportion of deaths from Bright's disease are taken for a period of three years (1901 to 1903 inclusive), as this gives a longer period of time and a safer number for making comparisons. It is impossible to determine from the records of the Health Office the proportion of acute to chronic Bright's disease, or the proportion of parenchymatous and interstitial forms of the disease. The cause of death is often reported as "Bright's disease" or "uremia." The records of the John Sealy Hospital of this city, do not show an unusual proportion of acute Bright's disease, and the numbers of chronic parenchymatous and chronic interstitial forms, vary for different years, but do not appear to differ from those reported from other hospitals. It is the opinion of medical practitioners in Galveston that the disease is generally chronic, and seems to attack young people (under twenty or thirty years) with unusual frequency. In such cases it is usually

TABLE VII.

Comparison of Mortality Rates and Climatic Conditions of Different Cities.

City.	Total number of deaths from all causes.	Number of deaths from Bright's disease.	Annual mortality rate per 1,000 of population.	Percentage of deaths due to Bright's disease.	May.		June.		July.		August.		September.	
					Mean humidity.	Mean temperature.	Mean humidity.	Mean temperature.	Mean humidity.	Mean temperature.	Mean humidity.	Mean temperature.	Mean humidity.	Mean temperature.
Denver	2,484	94	18.6	3.8	56	56°	52	66°	48	72°	49	70°	50	62°
Boston	11,277	371	20.1	3.2	70	56°	68	66°	72	71°	76	69°	79	62°
Atlanta	2,387	81	26.6	3.4	62	69°	67	76°	73	78°	75	77°	75	72°
Indianapolis	2,817	87	16.7	3.1	65	63°	69	70°	62	76°	65	74°	68	66°
Kansas City	2,852	86	17.4	3.0	66	64°	65	73°	63	78°	66	76°	69	68°
St. Paul	1,574	91	9.7	5.7	61	57°	63	68°	68	72°	69	69°	73	61°
Minneapolis	2,183	102	10.8	4.6										
St. Louis	10,320	524	17.9	5.08	69	66°	67	75°	64	79°	67	77°	71	69°
Baltimore	10,679	659	21.0	6.1	67	64°	69	74°	71	77°	73	75°	80	68°
Philadelphia	27,452	1322	21.2	4.8	66	62°	66	72°	70	76°	72	74°	75	67°
New York	70,229	5118	20.4	7.28	67	60°	69	69°	73	74°	74	72°	75	66°
New Orleans	8,287	496	28.9	5.9	74	75°	75	80°	79	82°	80	82°	79	78°
San Francisco	7,040	368	20.5	5.2	82	57°	83	58°	85	58°	87	59°	79	60°
San Antonio	1,294*	34	23.6	2.6	70	75°	68	81°	67	83°	68	83°	69	78°
Galveston (three years)	1,871	191	15.7	10.2	80	76°	80	82°	78	84°	79	83°	78	79°

* Total number of deaths was 1441, but 147 deaths were due to tuberculosis in non residents and these were deducted.

parenchymatous degeneration primarily, with secondary interstitial changes, and often there are also late arterial changes. When the disease occurs in middle or advanced life, the interstitial form seems to be more frequent, and there is pronounced arteriosclerosis.

A careful study of the table, shows that there is no relation between the degree of humidity or length of the warm summer season, and the mortality from Bright's disease; nor does the latter bear any relation to the general mortality rate. For instance, in Denver and Boston, the conditions of temperature are very similar while there is a wide difference in the humidity, but the proportion of deaths from Bright's disease is practically the same. There is considerable difference between the relative humidity in Galveston and in San Antonio, and also in the proportion of deaths from Bright's disease, but, on the other hand, the mean humidity and temperature are very similar in New Orleans and Galveston, while the death rate from Bright's disease in the latter city is nearly double that of the former. Indeed, the mortality rate from Bright's disease in New Orleans does not differ from that in New York, Philadelphia, Baltimore, St. Louis, St. Paul and Minneapolis, although the climatic conditions are very different.

Doubtless there are errors of diagnosis in many obscure cases, and often the existence of Bright's disease is unrecognized, but these conditions exist in all communities and a comparison of statistics is the only means that we have of determining the unusual prevalence of a disease in any locality. There appears to be no doubt that Bright's disease is more prevalent in Galveston than in most cities, but it seems highly improbable that the climatic conditions have anything to do with this. Galveston is an exceptionally healthful place, and the general mortality rate is low (15.7). The high general mortality rate in Atlanta and in New Orleans is doubtless due to the large colored population. Notwithstanding a considerable colored population, the mortality rate of Galveston is low, and it will be observed that there is no relation between the general mortality rate and that from Bright's disease in any of these cities.

It has been suggested by some that the use of hard artesian-well water might have some causal relation, but this seems improbable, as other cities have a public water supply from the same source, and no such result is observed. To the writer there are two causes which seem more plausible than any of the explanations usually given: (1) The excessive use of meats in a climate in which proteids cannot be so readily metabolized as in a colder climate: and (2) the failure to recognize and properly manage acute infections. Scarlet fever is very often so mild that it is unrecognized and never treated. All the diseases of childhood are unusually light in Galveston. This is probably due to the higher resistive powers which result from the outdoor life at all seasons in a mild climate and on the seashore. Doubtless dengue and influenza, like scarlet fever and diphtheria, can leave a dormant lesion of the kidneys which gradually develops into a chronic nephritis, even though the acute symptoms from the original disease may not have been severe. This would appear to be a very important matter, and too much care cannot be exercised in attending to the after-effects of light attacks of acute infections.

INFANT FEEDING AND MILK MODIFICATION.[1]

BY RANSFORD E. VAN GIESON, M.D.,
OF BROOKLYN, NEW YORK.

In opening this discussion, my special object will be not the construction of formulas, but the study of principles upon which formulas should be founded. I desire to direct your attention to the composition of human and cow's milk, to the remarkable differences that exist between their proteid contents and how best to adapt the foreign element of cow casein to the digestive power of the infant stomach. Also to justify the use of cereal decoctions and high dilutions, as well as the use of cane sugar instead of cow lactose.

I select two definitions of the fluid called *milk* as best suited to our present purpose—one from the standpoint of the trained and expert chemist and another from a practical clinician, who is also a respected authority on milk analysis.

Dr. Bartley, in the fifth edition of his "Medical Chemistry," 1903, defines milk as an "opaque white fluid containing fat globules in suspension, albumin, sugar and salts in solution, and caseinogen in partial solution." Dr. Arthur V. Meigs, in the *Archives of Pediatrics*, October, 1902, says: "Milk consists of water, salts, fat, sugar and *something else*. That something else we have chosen to call casein, but what it really is, none of us need pretend to understand. Milk analysis helps us to know how to prepare food for babies, but the chemistry of casein is still in its infancy."

The composition of human milk in the living gland of the mother is never constant. There are subtle combinations effected therein which will always elude and baffle the most elaborate chemical research. Hence we find marked variations in the analyses given by different authorities, but by making a general average for each period of lactation we obtain results accurate enough to form a working basis for the modification of cow's milk to the purposes of infant feeding. In so doing we must not be misled into the belief that we should "imitate maternal milk." That is a simple impossibility, as none of the constituents of animal milk are chemically or physically identical with those of human milk, except the water and inorganic salts. Were it otherwise the cow could be led into the nursery, and the problem would be

[1] Read before the Medical Association of the Greater City of New York, June 13, 1904.

solved, and this discussion would be an entirely superfluous symposium.

Hoffman, in 1894, concludes that after the third week of lactation human milk varies but little. He gives the following average: Proteids, 1.03 per cent.; fat, 4.07 per cent.; sugar, 7.03 per cent.; ash, 0.21 per cent.

Judson and Gittings say: "The results of all analyses show that the proteid per cent. is very high in the first weeks after birth, diminishing after the thirtieth day. From the sixtieth day there is a decided and rapid fall. After the seventieth day the composition of the milk remains quite uniform. The fat is a varying constituent, ranging from 2½ to 4⅕ per cent. It differs materially from cow fat, being much more easily digested."

There does not seem to be any constant or fixed relation between the proteids and fat. There is always an excess beyond the apparent needs of the child. The sugar content ranges from five per cent. in the first month to seven per cent. during the remainder of lactation. The specific gravity of human milk will range from 1.029 to 1.032. It affords no certain guide to the quality of the milk, unless either the total solids or fat is known. In modifying cow's milk, the familiar rule to decrease the proteids and raise the sugar to the average proportions of the same in human milk is not always to be strictly observed. While we depend much upon comparative analysis of the two fluids, we must ever bear in mind that their most essential ingredients are not identical, nor must we ignore the vast clinical experience in this direction which established infant feeding on a safe and successful basis, long before milk analysis had reached its present accuracy. The essential knowledge which will guide us through the maze of conflicting theories and formulas is a thorough and familiar understanding of the great difference between human and cow casein.

The chief characteristic of cow casein is its ready coagulation into large indigestible masses, rich in fat. While human casein coagulates into fine, soft flocculi containing much less fat, easily acted upon by the gastric juice. If we examine the contents of a nursing infant's stomach one-half hour after a moderate meal, we find the chyme almost completely fluid and susceptible of filtration. The stomach contents of a child after a meal of cow's milk, at the end of three-quarters of an hour show casein clots still undigested. It is prudent and safe to look upon cow casein as admirably adapted to the purpose for which it was intended—the nourishment and development of the calf; but for the human species we may, with profit to the little ones intrusted to our care, regard it as a *foreign body*, capable also of sustaining infant life, after it is *adapted* to a stomach of feeble power, by nature designed for an easily digested food. Again, woman's milk, after coagulation, is thin, almost liquid. It does not require active peristaltic action to revolve its particles so as to become normally digested. It passes readily down from the nearly straight stomach into the intestines to be farther acted upon by their juices. With cow's milk the peristaltic action, normally weak, fails to soften the tougher clot, which very slowly finds its way from the stomach to the intestines, where portions still undigested are likely to prove sources of irritation.

The practical clinical fact here obvious is the important one that the digestive organs of young animals are adapted by nature to their normal food, and, as we cannot alter the organs, we must, in changing from the calf to the infant, modify the food to the organs. To do this we must so envelop, surround and come between the particles of cow casein not only by dilution, but also by the use of some viscid material, so that they shall not cohere in tough and indigestible masses.

We need also to expose a large surface of this foreign casein in a finely divided form and in *smaller quantities* than the *average amount* of *human casein* to the digestive action and feeble peristaltic motion of the infant stomach.

Dilutions of cow's milk have been made upon the assumption that because woman's milk contained 1½ per cent. casein, therefore we should make the mixture contain the same amount of cow casein. This error arises from following too closely laboratory inferences. Somewhat slowly this error has been corrected, and we now observe that the best authorities begin with high dilutions. For the first month with only one-half of one per cent. of proteids and 2½ per cent. of fat, and gradually reach one per cent proteids at the end of the month.

During the first month of normal lactation, the amount of human proteids may rise as high as 2⅗ per cent.; and some writers, disregarding and rejecting all clinical experience, have recommended undiluted milk for young infants because the caloric value of woman's milk is almost identical with that of cow's milk. Schlessinger, of Breslau (*Berliner klinische Wochenschrift*, No. 7, 1901), assumes the responsibility for this teaching, and advises small quantities of whole milk during the first month. Where the proteids are diluted to one-half per cent. with two per cent. of fat, we get excellent results for the first two weeks, all theory to the contrary.

Dilutions of milk make it necessary to add some form of sugar to bring the total amount in the mixture to 5 or 6½ per cent. Here, as in almost everything else connected with infant feeding, there has been considerable dispute. Personally I have always used pure granulated white cane sugar. I am not prepared as yet to believe that cow lactose and human lactose are identical in composition or effect. It is contended vaguely and without sufficient proof that it is more liable to set up fermentative changes. It is also frankly admitted that it is often better borne than cow lactose. After using it for

many years I have found no reason to change my views as to its superiority over cow lactose. Pure levulose, being a very easily assimilated fruit sugar, promises to give satisfactory results. Its expense at the present time would prevent its general use.

In considering the farther modification of cow casein beyond that of simple dilution, we find that for many years some form of cereal decoction has been empirically and successfully used in small quantities. As no starch is found in the milk of women or the lower animals, it has been objected to as unfit for milk modification, but clinical experience and more recent investigations prove incontestably that when used in proper quantities it is one of the most valuable means we possess for milk dilutions. Dr. Shaw (*Albany Medical Annals*, 1904) details a series of interesting experiments in connection with this point which are instructive and convincing, proving that starch in one-half per cent. solution is converted into erythrodextrin and maltose in the stomachs of young infants. He arrives at the following conclusions: "That the saliva of young infants contains a diastatic enzyme capable of converting small amounts of starch into maltose; that the diastatic action of the saliva may continue in the stomach as long as two hours after feeding; that on physiological grounds there is no reason why young infants cannot digest small quantities of starch."

The experiments were made on thirty-five infants, the youngest being six days old. Control tests of the starch solution were always made.

It has been taught that the attenuation of cow casein depends upon the degree of dilution, irrespective of the presence of starch. To determine this point, at the suggestion of Dr. T. M. Rotch, of Boston, the question was studied by Dr. F. W. White (*Boston Journal Medical Sciences*, December, 1900). The experiments justify the following conclusions: (1) "Dilution of milk with cereal decoctions of proper strength render the casein curd much more fine, soft and digestible than dilution with water; (2) "The above property is due mainly, if not wholly, to the starch in solution. The most desirable amount of starch in the milk mixture for practical use is approximately three-fourths per cent.; (3) "Diastase, by converting the starch to dextrine and maltose, promptly lessens and removes the action of cereal waters upon casein. Its addition, therefore, is not a practical measure when the action upon the curd is desired; (4)"Albumin water has no practical value as a diluent of milk; (5) "Lime water added to milk has no more effect than water upon the character of the curd produced in the animal stomach."

It was also found that this mixture, after pasteurization at 167° F. for thirty minutes did not interfere with the action of the starch, but rather improved it, the curd being somewhat finer after being heated.

The fat of cow's milk gives comparatively little difficulty. It should always be taken from fresh gravity cream. Centrifugal cream is still *sub judice*, and until we know more about it, it will be safe to take advantage of the top milk mixtures. The tables of Chapin and Holt are valuable and sufficiently accurate for home modification. Laboratory or prescription milk recombines the milk elements in any desired proportion after they have been separated by centrifugation. From purely theoretical inferences it would seem to be correct in principle, but clinical experience, according to Dr. Starr, does not bear out the theory. The natural fat emulsion is destroyed by the use of the separator, and in some way the digestibility of the proteids is diminished.

Milk may be farther modified by peptonization, whereby the curd is softened and partially converted into albuminose by pancreatin and bicarbonate of soda. This method is especially useful where digestion is weak and sufficient proteids cannot be assimilated. Where the digestion is normal it is not necessary.

Modification by pasteurization and sterilization may be considered as necessary evils, to be used when indicated and discontinued when the necessity is past. Of the two evils, pasteurization at 155° F. for thirty minutes is decidedly the lesser. Dr. Freeman (*Archives of Pediatrics*, Vol. XIV) reports that one million bottles thus prepared were distributed among the poor of New York. During the three years of its use the number of deaths from diarrheal diseases were less by 860 than in the three preceding years.

What we have already said applies to pure cow's milk and cream as the basis for modification, but for many years condensed milk has been very popular among all classes as an infant food. As an exclusive food it cannot be recommended, as it is usually used, especially among the poor, by simple dilution with boiled water. Children seem to thrive upon it, for a time at least, in spite of the very low fat percentage, but sooner or later the signs of malnutrition become apparent in the form of rachitis, scurvy or anemia. When properly diluted and fortified with cream, barley and lime water, five per cent., it can be continued for a long time without injurious effects. But where cream can be obtained good milk can also be obtained, and there is no reason in such a case for using it.

In conclusion, we cannot fail to observe that it is possible to feed infants by a variety of methods, founded on different theories, and have them gain in weight and vigor. It must be obvious that in all these methods some central fact or facts predominate and harmonize the difference in methods. It would seem, in reviewing those that are most successful, that the two chief factors are purity of the milk and the proper adaptation of the cow proteids to the capacity and power of the infant's digestive organs.

In this brief summary of our subject, my endeavor has been to make these facts the predominating feature. How best to modify and adapt the foreign elements of cow's milk for infants was long ago discovered by our fathers in pediatrics. Modern research has proven that they were correct in principle and practice. The findings of the observant clinician at the bedside usually precede those of the chemist in the laboratory. Mere chemical analysis is not always to be regarded as a true criterion of the value of food. The digestibility of the food represents its true value, and in infant feeding is the all-important question.

CICATRIZATION—BLOOD VESSELS IN ULCERS OF THE BLADDER.[1]

BY GUSTAV KOLISCHER, M.D.,
OF CHICAGO, ILL.

SINCE I have called attention to the fact that ulcers of the bladder are of a rather frequent occurrence in cases of chronic cystitis, and run a well-defined and typical course, this condition was rather uniformly recognized by the urologists and the treatment suggested and successfully employed by me was taken up by all genito-urinary men familiar with cystoscopy and endovesical work. I again wish to mention that this treatment consists in curetting the ulcers and cauterizing their bottom by means of silver nitrate in substance, or by employing the galvano-cautery. All this is done through an operative cystoscope.

This energetic and radical proceeding becomes necessary because these ulcers are the product of foci of dense infiltration, and because the bottom of these ulcers is covered with a thick coating which adheres quite strongly to it, so that even a concentrated solution of some caustic will never be able to reach the granulations in order to prove the desired reaction, if the coating was not previously removed. It is true that the above-mentioned treatment will always be a complete success so far as the disappearance of the ulcers is concerned. But in some cases, although the ulcer has disappeared, certain annoying symptoms will remain. This is especially true in cases in which the ulcers are not the consequence of a chronic cystitis, but are due to lesions of the mucosa inflicted upon an otherwise healthy lining of the viscus. These losses of substance are infected either at the time when the lesion was inflicted or the infection occurs later on. In this way, the epithelialization of the defects is prevented, and one or several ulcers are established.

These ulcerations have a decidedly different appearance from ulcerations due to chronic cystitis. The latter appear always on the summit of a little elevation, and show extensive surrounding infiltration because they are the result of a suppurative softening of a focus of inflammatory infiltration. The former are sunken in the mucosa, so that their bottom lies underneath the level of the bladder mucosa. Extensive surrounding infiltration is only exceptional, and very rare. We also, as a rule, miss the thick and miscolored coating which covers the bottom of cystitic ulcers so that in this variety the irregular granulations of the ulcer lie bare.

These ulcerations are of a traumatic origin, as a rule, due to instrumentation. The use of catheters with a raw surface, injudicious sounding or the producing of burns through a cystoscopic lamp, are the most frequent causes. In some cases, these traumatic ulcerations are the result of lesions inflicted by extraneous bodies introduced into the bladder by the patients themselves. In some cases the removal of the guilty foreign bodies and antiseptic flushings and instillations will suffice to bring about the clearing up of these traumatic ulcerations, and in the further decourse, accomplish the epithelialization of the defects. In stubborn cases, however, we have to again resort to curetting and cauterizing.

In four of my cases of this category I made the rather surprising observation that disagreeable symptoms, such as irritation in the bladder region, frequency of urination and occasional tenesmus persisted, although the urine was cleared up perfectly and repeated and careful systoscopic examinations proved with absolute certainly that the ulcers had healed up and complete epithelialization of the defects had taken place.

There is only one theory I have to offer for explaining this occurrence, and the results following the therapy employed seems to bear me out in my statements.

I noticed in most of my cases of traumatic ulcers that when the ulcer began to heal, quite large blood vessels loomed up in its neighborhood, and led to the circumference of the ulcer. It impressed me that these blood vessels might be something similar to the cicatrization loops which appear running to the ulcers in the cornea of the eye, and I actually do not know of any better comparison for this condition. These blood vessels appear in the number of two or three or four, and in approaching the circumference of the ulcer they show a meandering course; the loops lie very close to each other, giving the appearance of the diagram of a micrometer screw. It occurred to me that the persisting of these blood vessels might have something to do with the sensation of irritation of which the patients continued to complain, even after the ulcers had healed. I remembered the explanation that Hebra gave for the itching which carriers of varicose veins on the legs experience.

He claimed that the itching was due to the sensation produced by the very slow and torpid flow of the blood, in dilated and meandering blood vessels.

We observe similar sensation of itching, heaviness and frequency of urinary cells in cases of so-called bladder hemorrhoids.

[1] Read before the February, 1904 meeting, of the Chicago Urological Society.

I obliterated these blood vessels with the pointed galvanocautery of my operative cystoscope, and after the eschar was thrown off, which, as a rule, takes about a week, the symptoms had entirely disappeared and the patients remained well.

TUBERCULOSIS IN OUR PUBLIC INSTITUTIONS.

BY JAMES GREENWOOD, M.D.,
OF SAN ANTONIO, TEXAS;
SECOND ASSISTANT SUPERINTENDENT, SOUTHWESTERN INSANE ASYLUM.

TUBERCULOSIS is by far the most serious disease we have in an asylum, because its course is usually so rapid, there are always so many patients with lowered vitality in danger of becoming infected, and especially, since so little can be done to prevent expectoration of sputum laden with tubercle bacilli on clothes, bed, floor, walls, and everything around.

In all situations where people are confined, either by occupation, religious orders, poverty, or the requirements of law, as in asylums or prisons, tuberculosis is a serious problem with which to deal. Under these conditions we have lowered vitality from lack of fresh air, poor food, exposure and disease on one hand, and on the other, intimate contact of those already affected with tuberculosis, with the serious difficulty of taking proper precautions in the destruction of their infected sputum.

In an insane asylum a large percentage of our cases are demented, having little physical or nervous constitution, and are in constant danger of any infection, such as tuberculosis, pneumonia, or gastro-intestinal intoxication.

The acute cases are likewise in a state of lowered vitality, and present conditions favorable to infection with tubercle bacilli. These patients are in close contact with those already infected whose expectorating on everything around them is almost impossible to prevent. This sputum, laden with tubercle bacilli, dries, becomes dust, blows about here and there, the wards become infected and everything producing dust, as sweeping or dusting stirs them up for all to breathe,—so that patients, attendants and doctors are in constant danger of contracting the disease.

The tuberculosis record at the Southwestern Insane Asylum is as follows: During the twelve years of its existence there have been 392 deaths, of which 85, or 21⅔ per cent., were due to tuberculosis. Nine-tenths of our patients are between twenty and fifty-five years of age. Eleven-twelfths of our deaths from tuberculosis were at this age. The total death-rate per 1,000 living in the United States for this age is about ten, of which 4.4 to 4.8 is due to tuberculosis. In the asylum for twelve years we have had an average yearly death rate per thousand, treated for this age, due to tuberculosis alone, of 13. This is more than from all other diseases on the outside, and three times as many as are caused from tuberculosis alone in the United States for this age.

During the first three years there were no deaths from tuberculosis, but as the wards became infected, the death rate from tuberculosis has increased, until it has averaged 18 per 1,000 treated, for the last five years.

Table No. 1 gives the number of deaths each

Table 1.

Year to Sept. 1.	Total Deaths	Deaths due to Tuberculosis.	Average Daily No. of Patients.	No. Treated for Year.	Per Cent. due to Tbc.	Per 1000 Treated.
1892	1	0	..	..	0	0
1893	9	0	177	234	0	0
1894	15	0	235	294	0	0
1895	15	4	238	338	25	11.8
1896	15	4	271	361	25.1	11.1
1897	9	1	274	347	11	3
1898	18	3	274	331	16	9
1899	20	4	474	512	20	7.8
1900	89	13	704	894	15	14.5
1901	47	10	761	852	21	12
1902	67	17	745	915	25	18
1903	52	18	770	916	35	19
				for ½ Yr		
6 m. to Mar. 1, 1904	28	11	770	920	40	25
				for 1 Yr		
				460		
Totals	392	85		6474		

year, the number of these due to tuberculosis, the number treated, the percentage of death due to tuberculosis and the rate per 1,000 treated due to it. The average length of time in the asylum of those dying with tuberculosis has been 3½ years. Thirty-eight, or over one-half, were here

Table 2.—Time in Asylum Before Death.

Few hours	1
1 month	2
2 months	2
3 months	4
4 months	4
6 months	1
9 months	2
1 year	6
2 years	12
3 years	10
4 years	10
5 years	4
6 years	3
7 years	1

from one to four years. Sixteen had been here under one year, and 24 for five years or over.

Table No. 2 gives the duration of their confinement in this asylum. In the last twelve months on the female side, we have had 29 deaths, of which nine, or 30 per cent., were due

Table 3.—Number of Deaths from Tuberculosis in Twelve Years.

Age, 15 to 20 years	3
" 20 to 25 "	12
" 25 to 35 "	24
" 35 to 40 "	20
" 45 to 55 "	12
" 55 to 65 "	4
Over 65 years	1
Total	76

to tuberculosis. This is 19 per 1,000 treated. Of these nine, three died on Ward C, and three more were sent from this ward to the hospital after the disease was contracted. Six of these nine cases therefore contracted the disease on this

ward. This is the ward where our most demented cases are kept, and presents the most favorable conditions for contracting tuberculosis on account of the physical condition of the patients, and the difficulties of preventing those already affected, from infecting the ward.

Of these nine cases, eight were dementia, two being epileptic dementia; and this shows the influnce of the lowered vitality in predisposing to contracting the disease.

On the male side we have had during the last twelve months, 28 deaths, of which eight were due to tuberculosis. Four contracted the disease on Ward No. 7, a ward very similar to C, in the character of its patients, and the other four on Ward 4, where about nine-tenths of the cases are dementia. Of these cases eight were dementia.

At present we have six known cases of tuberculosis, all females, and all are at the hospital. Of these six cases, four contracted the disease on Ward C, the same infected ward that has been responsible for so many cases. We have a few suspicious cases besides, where examination of sputum and physical signs are negative, yet a slight cough, some loss of weight, an evening rise of temperature, make us suspect them of having the disease.

Our methods of prevention are as follows: All cases are sent to the hospital as soon as diagnosis. Some few patients are too noisy and violent, and have to be kept on the wards; these are sent to Ward C. At the hospital, when possible, patients are made to use spittoons, in which five per cent. chloride of lime is kept. Clothing on which they have expectorated is removed at once. All clothing, sheets, etc., of these patients is put in separate bundles, sent to the laundry with directions to be boiled before opened. All these patients use separate cups and glasses. Mattresses are disinfected by exposure to two per cent. formaldehyde gas for eight hours in a sealed room. The floor is washed with chloride of lime solution, instead of sweeping.

We have had no known cases of tuberculosis to develop at the hospital during the last year; so, considering the number of tuberculous cases present, and the difficulties in attending them, our methods have been very successful.

In Ward C we have made some radical changes. Any room in which a tuberculous patient has been sleeping is disinfected. The clothes are sent to the laundry to be boiled; the mattress disinfected by exposure to formaldehyde in a sealed room, the room, floor, walls and bedstead are washed with five per cent. carbolic solution. All the mattresses and blankets, pictures, etc., in this ward have been exposed for six hours to formaldehyde gas. The walls and floors are washed with five per cent. carbolic solution. There are no rugs, carpets or curtains to collect dust. The ward is swept with wet sawdust sprinkled over the floor beforehand. Often the floor is scrubbed with chloride of lime or five per cent. carbolic instead of sweeping. All mucopurulent expectoration is watched for, examined for bacilli and the patient examined so as to be isolated at the earliest possible moment. During the day this ward is kept almost free from patients. They are usually at the park, but when they come back, they go out on a long gallery.

What we most need is a special hospital for tuberculous cases, so built that they are given plenty of fresh air, yet easily disinfected. Another important preventive measure would be the enactment of a law requiring all cases admitted to be free from tuberculosis, as it is for other contagious diseases—smallpox, for example.

At present we have a law that no patient laboring under an infectious or contagious disease shall be admitted to an asylum. Tuberculosis should be included in this classification, and no known case should be admitted until a separate hospital is provided, where they can receive proper attention, and yet not endanger the lives of others.

COLLOIDS AND IONS.

BY WILLIAM R. WILLIAMS, M.D.,
OF NEW YORK.

THIS paper aims to present a few of those results of some of the more recent work of physiologists which bring us a little nearer to the secrets of vital processes. While this line of investigation has not as yet had much effect upon our immediate work as physicians, there is reason to believe that in time it will greatly advance our knowledge of physiology and pathology, and that therapeutics also will therefore gain by it.

Perhaps it may be well to begin with a review of some of the better known points. Much of the work has to do with electrolytes and ions. An electrolyte is a substance which, when melted or in solution conducts electricity. The actual passage of the current through such a solution is associated with certain changes called electrolysis. The molecule is found to be dissociated into two or more electrically charged particles called ions. Some of these ions are charged positively, and tend to migrate to the negative pole, the cathode; they are called cathions. Others have a negative charge and go to the anode; they are anions. For example, sodium chloride is an electrolyte, it is dissociated into two ions. Na is the cathion and goes to the cathode, Cl is the anion and goes to the anode. Sulphuric acid splits into three anions, two cathions, H and H, each with a positive charge, and one anion, SO_4, which has a double negative charge. In solutions of electrolytes a greater or less number of ions exist in a free state, even when not in an electric circuit, and move in all directions in that liquid.

When, however, an electric current is passed through the liquid, the ions assume a definite position relative to the current and tend to accumulate at one or other electrode. When the

ions reach the oppositely charged electrode, they part with their charges and become inert. Faraday said that the passage of electricity though solutions of electrolytes is possible only through the migration of these charged particles. Primarily, however, the dissociation is not affected by the current, but by the act of solution. H_2SO_4 is an electrolyte, but an attempt to pass a current through pure 100 per cent. sulphuric acid is unsuccessful. It is a non-conductor, it is not dissociated into ions. If a little water is added some of the molecules are dissociated into ions, and the liquid now conducts the current.

The ability of a solvent to dissociate the molecules is called its dissociating power. This varies greatly with different solvents. Water or possibly hydrogen peroxide has the greatest dissociating power, but the alcohols and other liquids possess it to a less degree. With the same solvent the degree of dissociation varies with the temperature, the strength of solution and the particular solid. In very dilute solutions all of the molecules are dissociated. The table shows the degree of dissociation of sodium chloride in water at 18° C. The strength of solution is expressed in gram-molecules per liter. A gram-molecule in a mass of a substance that weighs one gram multiplied by the molecular weight of the substance. This is called a mol, often abbreviated to m. A mol of sodium chloride is 58.5 g.

Dissociation of NaCl in H_2O at 18° C.

M per Liter.	Grams per Liter.	Per Cent. solution.	Degree of Dissociation.
M	58.5	5.85	0.68
$M/_2$	29.2	2.92	0.73
$M/_{10}$	5.85	0.58	0.84
$M/_{100}$	0.58	0.06	0.93
$M/_{1000}$	0.06	0.006	0.98
$M/_{5000}$	0.012	0.0012	0.99
$M/_{10000}$	0.006	0.0006	1.00

From this table it will be seen that the ordinary solutions of this salt are dissociated to a very great degree. The neutral salts of the strong mineral acids have about the same degree of dissociation.

Colloids.—The next subject that I would lay before you is that of colloids.[1] Mixtures of colloids and liquids appear in different physical states. (1) There is the solution, a more or less viscid liquid, called a sol, and when the liquid element is water a hydro-sol. (2) A soft solid, but made up of the solid colloid and of liquid components. This is a gel, and when the liquid component is water a hydrogel. A mixture of gelatin and water of the proper strength, (*e.g.*, ten per cent of gelatin) is liquid, a hydrosol, when hot; if it is cooled to about room temperature, it sets and becomes a hydrogel. If again heated it becomes liquid. By alternately heating and cooling, it may be changed from one state to the other indefinitely. Such a system is called "reversible." All colloids do not act in this way. Thus, if a hydrosol of silica becomes solidified, it cannot again be liquefied. It forms an "insoluble" or "irreversible" gel. It is often possible to change a soluble gel so that it is no longer soluble; thus, formaldehyde acts on a gel of gelatin so that heat no longer liquefies it. (3) There is finally the colloid alone without any admixture of liquid. It is a solid.

The change from the liquid to the solid state, and *vice versa*, depends upon various factors, the temperature, the strength of solution, the presence of other substances, such as mercury bichloride, chromic acid or its salts, osmic acid, formaldehyde or alcohol, or the electric current. Many of the experiments with colloids are very interesting. If white of egg is mixed with nine volumes of pure water, filtered, boiled, and dialyzed against water to remove most of the salts, a blue opalescent solution is formed, which is not coagulated by boiling. The solid constituent is an alkali-albumin-like body. It is present in the water as minute, discrete particles in suspension, and to their effect on light the opalescence and blue color are due. If now, by prolonged dialysis against pure water, more alkali is gotten out, the mixture becomes a gel, and when all of the alkali has been removed, the solid constituent is precipitated in flakes. If a free acid is now allowed to diffuse in, the process is reversed, and a blue solution is again formed, but the solid is now an acid-albumen. The substance is extremely sensitive to the action of acids or alkalis. For instance, if a pin-point is dipped into a strong solution of sodium hydrate, shaken in the air and then washed in 5 cc. of pure water, an alkaline solution is formed that will completely dissolve a considerable amount of the coagulum. In the alkaline solution it is found that the solid constituent has an electric charge that is negative in relation to the solvent. In the acid solution the solid is electro-positive to the solvent. At the point of precipitation it is iso-electric with the solvent. As it approaches the iso-electric point, the solution is exquisitely sensitive to the electric current. A constant current of a millionth ampère passed through the slightly alkaline, opalescent liquid leads to the formation of coagulated flakes at the anode, while the opalescence grows less at the cathode. Again, as the iso-electric point is approached, mere mechanical agitation is enough to precipitate the colloid.

In his book on "Insectivorous Plants" Darwin[2] has recorded some observations that bear upon this work. They have to do with the contraction of the tentacles of the insect-eating leaves of the sun-dew, Drosera. The movements of the processes are very slow. To contract down upon an object needs an hour. This position is maintained for hours, and finally the straightening of the tentacles needs one or more hours. These sluggishly moving tentacles were watched under a microscope while living. When the cells were at rest the protoplasm was perfectly clear. As they contracted under the influence of some stimu-

lus, a change that Darwin called "aggregation" took place. It consisted in the appearance of dark, opaque masses in the protoplasm that slowly but constantly change their form. The process of aggregation could be traced down the tentacle, pausing a while at the cell partitions, until it reached the base of the tentacle and spread to the body of the leaf. It also appeared in other tentacles near those first affected. So long as the contraction lasted the opaque masses were present. As the tentacle relaxed, the masses disappeared and the protoplasm again became perfectly clear. They first disappeared at the bases, and the clarification proceeded toward the apex. In older cells that had been stimulated repeatedly the tips of the tentacles always contained a few masses. In order to show this phenomenon, the cell must be alive and uninjured. Surprisingly delicate stimuli could bring it on. Solutions of various chemicals, mechanical stroking of the leaf, contact with inert foreign bodies, etc., were alike effective. He calculated the amount of ammonium carbonate necessary to cause distinct masses to appear within an hour, and found it to be less that 0.0005 mg. The living protoplasm acted exactly like reversible colloid.

When fixed by death, with or without reagents, protoplasm is still colloidal, but no longer reversible or soluble.[3] When so fixed it has a more or less definite structure. It is important to compare other colloids with protoplasm in this respect also. Many colloids have been used in this research, such as serum albumin, globulin, paraglobulin, the egg-white, and gelatin, separately or taken together. They have been fixed by the various methods used in histological work. In every case the coagulated mass has been found to have a granular or reticular structure, the meshes of which contain the liquid constituent of the sol. The resulting figure of the framework seems to depend upon the concentration of the solution, the fixative, the particular colloid or colloids used, the temperature during and after fixation, and the amount and kind of crystalloids or insoluble bodies present during the process.

If the egg-white solution mentioned previously is coagulated, and very thin sections, about one micron thick, are examined with an oil immersion lens, a fine net is seen and at the intersections are minute spheres, which are connected by fine trabeculæ. The diameter of the mesh varies from less than one micron to several microns, depending upon the factors mentioned above. If electrolytes are present, the mesh is larger, and the coagulation is more easily effected. Although the coagulated mass may have the same volume as the preceding solution, it is now made up of both solid and liquid constituents. This can be shown by purely mechanical methods in the egg-white gel, in gelatin, etc. Perhaps the most familiar example is a blood clot where the insoluble colloid fibrin contracts spontaneously under the ordinary conditions found in a blood clot.

If in the solution of the colloid there are also solid inert particles in suspension, the structure after coagulation is somewhat modified. Very finely divided particles of carmine were mixed with the egg-white solution. In the clot all of the carmine grains were found in the nodal points of the mesh, and the size of the mesh and thickness of the bars were increased near the granules. This closely resembles the structure found in certain secretory cells that contain insoluble secretory granules.

Perhaps the strongest evidence of preexisting structure in protoplasm is the aster figure of dividing cells, or the striations of muscle. It is a question whether these appearances are due to the disposition of different substances which are quite separate or whether a uniform colloidal solution would present similar figures if fixed while under a strain. To test this point films of solutions of the modified egg-white, of soaps and other colloids were stretched across rings of cork. Then a very small drop of mercury was run upon the film. This subjected the film to a definite strain, the lines of force radiating from the mercury. While in this condition the films were fixed. The solid part of the clot had a fibrillar structure, the lines radiating from the center. This would mean that in a collodial solution either a strain produces heterogeneity or structure which is fixed in coagulation, or else that the strain disposes the molecular aggregates of the colloid along the lines of force, although the exact pattern may not be identical before and after fixation. In any case, it does not point to the existence of two kinds of substance such as spongioplasm and hyaloplasm. Furthermore, the colloid thus fixed is doubly refracting, just as striated muscle is.

It is pertinent here to recall that a living worm has been observed in a living muscle fiber. As it crawled along it displaced the bands and rods, but it left no wake, as they immediately fell into position again and the fiber looked exactly as it did before. This is hard to explain if the muscle protoplasm has the kind of structure usually ascribed to it. Hardy, who has done much work on this subject, draws the following conclusions: Structure is produced by sub-mortem or post-mortem changes in the cell, that are associated with coagulation. Coagulation and fixation are alike in being a desolution with formation of irreversible molecular aggregates with liquid in the meshes. The structure may be modified by foreign bodies in the colloid. Secretion masses and the carmine grains are such foreign bodies, but some secretion masses may undergo changes after the death of the cell and so still further change the structure of the colloid. The alveolar cells of the orbital glands of kittens and puppies were fixed in absolute alcohol, and very thin sections were cut and mounted. These preparations showed the secretion granules distinctly, and at the edge of the section, where it was about two microns thick, places were found from which the granules had dropped out. At these points the cell had a honeycomb structure enclosing the

spaces that had been occupied by the granules. There was no evidence of inner structure in the protoplasm itself, and the trabeculæ seemed homogeneous and structureless.

Again, similar cells were mounted in the field of a microscope in such a way that they could be watched while being treated with various liquids. Cells fixed in alcohol were treated with more diluted alcohols. In 60 to 40 per cent. alcohol the cell and the individual granules had swollen to several times their former diameters. The granules had lost their staining properties. Stronger alcohol again contracted the cell and granules to their original size, but the granules did not regain their staining properties, and the final picture gave no clue as to the amount of distortion and change in the processes of fixation and dehydration. It would seem, therefore, that the typical net of secretory cells in these preparations is the optical section of honeycombed protoplasm distended by the secretory granules; that it is not a net within the protoplasm, but a net composed of the whole of the protoplasm.

Fixing the cells in osmic acid fixes the granules perfectly, so that they no longer swell or change in water. Then the net is the conventional net of fixed colloids, with granules at the nodal points, and the meshes of the sponge are simply liquid-holding spaces. Cells from many different tissues and animals were examined in this manner, and in all it was found that the cell protoplasm reacted to osmic acid or bichloride of mercury, just as a soluble colloid does to a reagent that converts into an insoluble colloid. This would indicate that there is no evidence that the structure discoverable in the cell body of these cells after fixation has any counterpart in the living cell, much of it is artefact and very different pictures of the same gland cells are gotten by different reagents.

Living *Paramœcia* and other protozoa[4] illustrate colloidal properties in very interesting ways. They grow more readily in slightly alkaline media. In these cultures the animals had a negative electric charge in relation to the water, they showed negative chemotaxis to weak hydrochloric acid, and when in an electric current they moved toward the anode. Those grown in an acid media had quite opposite affinities. If acid were slowly added to the alkaline culture until the reaction became weakly acid, the organisms in the electric current would slow their progress to the anode, then stop, and finally most of them would move toward the cathode. The electric charge of the colloid in these tests depended upon its environment, its charge being opposite to that of the culture media, as was the cause of the egg-white solution.

Nucleo-proteids[5] have acid characteristics, the degree of acidity depending on the amount of nucleic acid present. This acid is most abundant in the chromatin of dividing cells and the heads of spermatozoa, hence their affinity for basic dyes. The extranuclear proteids are chiefly basic and are stained by acid dyes. There is some evidence to show a corresponding electrical difference between these classes of matter. The chromatin is electro-negative, the cytoplasm electro-positive. The difference of potential is greatest at the time of cell division, and possibly it modifies the figures, which suggest the lines of force in an electric field. If the different parts of cells have these electrical charges, then free cells which are relatively rich in nuclear substance, and to a greater extent free nuclei, should migrate against the electrical current toward the anode; cells that are chiefly cytoplasm should be less negative or even positive.

To test this, isolated cells from various tissues and as fresh as possible were put into $^{n}/_{4}$ cane sugar solution—which is isotonic with physiological salt solution—mounted on a slide and watched while a current of electricity was passed through. The rate of motion was measured by a micrometer. Frog's blood much diluted with the cane sugar solution was examined in this way. Most of the red cells moved slowly, 120 microns a minute, toward the anode, some were stationary, and a few were positive and moved with the current. The small leucocytes were distinctly negative, and went up the field at the rate of 1,500 microns a minute. The medium-sized leucocytes were slightly negative, but a few were neutral or even positive. The large leucocytes were decidedly positive, going down the field 120 microns a minute.

The same results were obtained from minced spleen or thymus. If the current was reversed, all cells stopped and started off in the opposite direction. Sperm heads from the winter frog were strongly negative and raced for the anode at 2,000 microns a minute. The testes of these frogs contain large cells, Sertoli cells, consisting of a round mass of protoplasm with a bunch of spermatoza heads at one pole. Such a cell orientated itself in the current with the sperm heads toward the anode, and sometimes the whole cell would move slowly up the current. A reversal of the current was followed by the slow rotation of the cell until the orientation was again complete, when the cell would again be pulled to the anode with the small end in advance. If an object of this shape were moving freely in a liquid the blunt end would always be in front, and the small end would follow like a rudder. These tests seem to bear out the hypothesis of the electrical charges very well. The cells which had the greater relative amount of chromatic substance were most strongly negative. The Sertoli cell in particular showed the greater negativity of the smaller part, the sperm heads, rich in chromatic substance, and the positive charge of the large mass of the cell protoplasm.

The *effect of ions* on different kinds of protoplasm has been the subject of much study. I will refer to a few of the experiments and their results:

Medusa.[6]—The medusa or jellyfish, so often

seen propelling itself slowly along the surface of the sea, is made up of an umbrella-like gelatinous mass, from the edge of which dangles a fringe of tentacles. Within this bell, corresponding to the handle of the umbrella, are the mouth parts. In sea water the bell contracts rhythmically by virtue of muscle fibers that radiate like umbrella ribs. This contraction forces the animal through the water. If now a cut is made that severs the ring at the edge of the bell from the central portion, this ring will contain practically all of the central nervous system of the animal. If these two parts are put in sea water the ring contracts rhythmically, just as the entire medusa did when intact. The central part, however, lies motionless.

Attempts were made to find the effect of various electrolytes on the central portion. It was put in a $^{5}/_{8}$m. solution of pure sodium chloride in water. This solution is about isotonic with sea water. The bell at once began to beat, and the rate increased until it was hardly possible to count the contractions. Another solution was prepared containing about the same amount of sodium chloride and in addition about $^{1}/_{300}$ m. $CaCl_2$. In this, after a latent period of a few minutes, the bell began to beat, and the contractions were more like those of the normal medusa in sea water. In other solutions, with about $^{1}/_{28}$ m. $CaCl_2$ or more, the beating was wholly absent. Strontium or magnesium acted like calcium in stopping the beats. Barium, however, acted very differently, for the beats started at once, and were very forcible. They did not last so long, the barium seeming to be more poisonous than pure sodium chloride.

It was thought that perhaps the calcium in the sea water prevented the beating of the central part of the bell in that medium. To test this, NaF and Na_2HPO_4 were added to sea water. When a little more than enough to precipitate all of the calcium of the sea water had been added, the central part of the bell acted just as it did in pure sodium chloride solutions. It would seem, therefore, that the calcium in the bell prevents its beating, and that the reason that it beats in those various media is that the excess of calcium is gotten rid of. There seems to be a limit to this diminution of calcium, however, for after a while the beats stop in the sea water to which the NaF or Na_2HPO_4 was added. Then, if the bell be put back into sea water, or solutions containing calcium, the beats begin again, after a latent period of a few minutes. This latent period seems to be the time necessary for some of the Ca ions to diffuse into the bell, or else for the F or PO_4 to diffuse out, or perhaps for both of these changes.

The inference from these experiments is that if a certain equilibrium exists between the sodium and calcium ions, the isolated center of medusa will beat rhythmically. If, however, this equilibrium is disturbed in either way, the beats will be modified or stopped. In ordinary sea water these ions are not present in suitable proportion.

The marginal ring is much less susceptible to the influence of calcium. It will beat in pure sodium chloride solution about as it does in sea water, and about as the uninjured jellyfish does. If calcium be added, even in considerable amounts, the only effect is to slow the beats a little. It will be remembered that the margin contains the central nervous system, and this suggests that while the inhibitory effect of calcium on the muscle is marked, it is very slight in the nervous centers.

Various muscle from the vertebrates is just as sensitive to the action of ions. The most convenient animals to work with are, of course, the cold-blooded ones, because their isolated fragments can be kept alive so much longer.

In the ventricle of the turtle,[7] strips of muscle were cut both from the venous end and from near the apex. Those from the venous end contained ganglia. If these strips are put in the animal's own serum, or in the artificial serum called Ringer's solution, they beat rhythmically. Ringer's solution contains NaCl 0.7 per cent. ($^{m}/_{8}$), KCl 0.05 per cent. ($^{m}/_{150}$) and $CaCl_2$ 0.026 per cent. ($^{m}/_{450}$). The apical strips did not beat in these liquids, and they only were used in the following experiments.

A strip from near the apex of the ventricle was put in a solution of NaCl about isotonic with the animal's serum. There was a latent period of an average duration of one hour, in which the muscle was quiet. Then rhythmic contractions began. At first the beats were small and infrequent, but they steadily increased in extent and frequency to a maximum, then they gradually faded away and stopped altogether. The average duration of this rhythmic activity was two hours. During this stage the strip grew steadily longer, that is, there was a progressive loss of tone. At the end of this stage the muscle did not react to mechanical or electrical stimuli. These exhausted strips were then put into Ringer's solution. They began to beat again after a few minutes, and continued to do so for twenty-four hours, but somewhat irregularly.

Other exhausted strips were put into a solution containing only NaCl and $CaCl_2$. The $CaCl_2$ at first amounted to only 0.1 g. in a liter. Later it was increased to 0.2 g. In this solution the beats started promptly, were perfectly regular, and continued for several hours, but not for so long as in Ringer's solution. There was also a progressive increase of tone.

To recapitulate, the fresh apical strips, put into sodium chloride solution, began to beat rhythmically after a latent period, the beats continued for about two hours and then stopped, and there was a progressive loss of tone. These exhausted strips could be made to beat again for twenty-four hours somewhat irregularly in Ringer's solution, or for several hours and with perfect regularity in a certain solution of sodium and calcium chlorides, and in this latter solution the tone steadily increased.

If, on the other hand, the fresh strips were put into a solution containing sodium and potassium chlorides in the proportions found in Ringer's solution they did not beat. If the potassium was not too strong the muscle was not harmed, and it would beat for several hours if transferred to Ringer's solution. There was also loss of tone.

If the fresh strips were put into a solution of NaCl 0.7 per cent ($^{m}/_{8}$) and $CaCl_2$ 0.026 per cent ($^{m}/_{450}$) there were vigorous beats for four or five hours. The tone at first decreased, but later there was a steady increase of tone ending in a distinct calcium-rigor. After this rigor developed, there were no further beats in any of the solutions tried. Before the rigor developed, the strips could be made to beat for a long time by transferring them to Ringer's solution.

To determine if possible the effect of oxygen[8] on the muscle, the solutions were boiled and cooled under oil. In these oxygen-free solutions the beats started as before, but lasted for a very short time only. Then solutions containing hydrogen peroxide in addition to the various salts were used. In such solutions an abundant supply of oxygen was provided. The oxygen alone could not start the beats, but if the solution contained sodium chloride also, the beats began and continued without exhaustion for twenty-four hours.

Again, caffeine was tried because of its stimulating effect on muscle. It did not start the beats, but if it were added to the sodium chloride solution, the beats were stronger.

That calcium is not necessary is suggested by the fact that the strips were made to beat in solutions that contained salts whose anions precipitate calcium.

In a recapitulation of the results of these researches one must first note the latent period. This is attributed to shock or else to the time needed for the diffusion out of potassium or other ions. After this, in a suitable environment, the strips beat rhythmically. Sodium and chlorine ions are necessary for the production of rhythmical activity in the apical strips from the turtle's ventricles. Caffeine intensifies the beats but cannot start them. Oxygen cannot start the beats, but it delays the exhaustion noted in sodium chloride solutions, and will cause the renewal of beating after exhaustion in sodium chloride solutions. Oxygen and sodium chloride will keep the beating going as long as Ringer's solution. Solutions of the oxalates that precipitate calcium will let the beats begin if sodium and chlorine ions are present. Sodium salts tend to produce a loss of tone. Calcium tends to make the beats slower and regular, and to produce an increase of tone that will go on to the production of a permanent rigor. Potassium may slow the rhythm, antagonize calcium, especially if sodium is present in normal amounts, and prevents spontaneous contractions in Ringer's solution, or in the animal's own serum.

Voluntary striated muscle also was found to be profoundly affected by ions. The gastrocnemius of the frog has been used in practically all of the experiments. It showed changes in tone, rhythmical contractions and a new phenomenon called "contact irritability."

Changes in Tone.—The experiments on muscular tone[9] were chiefly concerned with solutions much stronger than those in the body fluids. Thus, in Ringer's solution the strength in KCl is about $^{m}/_{150}$ and of $CaCl_2$ $^{m}/_{450}$, while the effects mentioned below needed a strength of KCl of $^{m}/_{80}$ or more. The experiments are interesting, however, and worth noting. If the frog's gastrocnemius was put into a solution of $^{m}/_{8}$ KCl, there was, after a short latent period, a very marked tonic contraction that lasted from twenty to one hundred minutes, during which there was no fluctuation whatever in the curve. Other potassium salts had the same effect. Those tried were the chlorate, nitrate, sulphate, iodide, bromide, chromate, bichromate, ferrocyanide, oxalate, cyanide and tartrate.

Weaker solutions had a similar but less intense effect. The weakest that caused distinct tone was $^{m}/_{80}$, about 0.09 per cent. If the contracting muscle were removed from the KCl solution, and put into $CaCl_2$, the muscle relaxed; or if $CaCl_2$ were added to the KCl solution the contraction was prevented or stopped. By the alternate application of KCl and $CaCl_2$ the muscle beat rhythmically and as rapidly as 70 times per minute. It was found that immersing the nerve only in the liquid had no effect. I have not seen a report of any such experiments with skeletal muscle with solutions comparable in concentration to the blood serum but unstriped muscle[10] was found to react in exactly opposite ways to strong and to weak solutions of these salts.

Rhythmic Contractions.—In another group of experiments[11] the frog's gastrocnemius was put into $^{m}/_{8}$ NaCl solution. The muscles soon began to twitch rhythmically just as the heart muscle did, and it continued to do so for several days, or about as long as the muscle lived. When a very small amount of a soluble calcium salt was added, the twitchings no longer occurred, but the muscles lived much longer than in a pure sodium chloride solution. Its living condition was determined by its reaction to other stimuli. This would seem to mean that the reason the frog's skeletal muscles do not beat rhythmically like his heart is that the blood contains Ca ions. The exised muscle itself contains calcium, and if this theory holds, salts of sodium, whose anions precipitate calcium, should have a more powerful effect in causing twitching than the chloride. Therefore, solutions of sodium fluoride, oxalate, carbonate, phosphate, etc., of the proper osmotic strength were tried. The hypothesis found confirmation, for in these solutions the beats were stronger than in the chloride solution.

It has also been shown previously by another experimenter that the injection into the body of living animals of a salt that is apt to precipitate

calcium is followed at once by twitching of all the muscles. It may be possible, therefore, that the accumulation in the blood of such acids, *e.g.*, oxalic acid, might lead to muscular twitchings and irritability. If this should prove to be the case, the condition might be cured by the administration of calcium. Lithium, rubidium and cæsium act like sodium. Magnesium and strontium act like calcium. Barium acts very differently. When a little $BaCl_2$ was added to the sodium solution, the weak twitchings became stronger and more tetanic. In a solution containing only barium the beats occurred and had the same tetanic character. They did not, however, last for more than a few hours. This is doubtless due to the poisonous action of all barium salts. The beats do not take place in sodium chloride of a less concentration than $^m/_{16}$, but in $^m/_{64}$ $BaCl_2$ they always were seen and sometimes in $^m/_{128}$. Such cathions as Zn, Pb and Cd also caused beating, but they are very poisonous except in very dilute solutions, and in the dilute solutions the muscle rapidly imbibes water, which alone suffices to stop the activity. It is, therefore, not surprising that the beating did not last long in these solutions.

Sodium citrate had a very interesting effect. Citric acid does not precipitate calcium in the tissues, but it prevents its action in other ways, preventing the coagulating effect of calcium. It also caused the twitching in much weaker solutions ($^m/_{200}$) than did sodium chloride. These experiments have special interest when compared with the medusa experiments where the effect of calcium on the central part of the swimming-bell was very similar. There, too, sodium citrate had a like effect, for if it was added to sea water the isolated center began at once to beat.

Contact Irritability[12]—In the work with voluntary muscle a new phenomenon, called "contact irritability" was discovered. When the frog's gastrocnemius was left for from one to three minutes in various solutions of a sodium salt whose anion precipitates calcium, there was no effect. If the muscle was then taken out of the liquid and exposed to air, it at once went into a condition of tetanus, or made several strong, tetanic contractions. If it was again restored to the solution, it relaxed at once. This process could be repeated many times by alternately putting the muscle into the solution and into air. The salts that acted in this way were sodium fluoride, carbonate disodic-hydric-phosphate, sodium oxalate and also sodium citrate. If instead of being exposed to air the muscle was exposed to oil, cane sugar solution ($^n/_4$ to $^n/_8$), glycerin, CO_2 or mercury, the same contractions were noted. The reaction was not due to evaporation, for it occurred in an atmosphere saturated with water vapor; nor to lessening of the hydrostatic pressure, for it occurred in mercury and other liquids under greater pressure than in the original solution. Solutions of the corresponding salts of lithium, potassium, magnesium or ammonium had no such effect. The only salt not a sodium salt that had this effect was ammonium sulphate, and it is interesting to note in this connection that the SO_4 ion acts like calcium in counteracting the toxic effect of pure sodium chloride on cells of fish eggs. Some other experiments suggest that the irritability is due to action on the nerve end-plates rather than on the muscle fibers.

If the nerve alone is put in the solutions, the effect is very different. The muscle and nerve were mounted so that the nerve only was immersed in $^m/_{10}$ sodium citrate. No reaction was noticed during the first five mintues, but then the muscle began to contract rhythmically. The beats increased in force and the tone increased, until a condition of tetanus resulted. If the nerve were lifted out of the solution the muscle slowly relaxed. It again contracted if the nerve were restored to the solution, and so on almost indefinitely. After the relaxation of the muscle had taken place in air the nerve was in a state of extreme irritability, so that mere contact with any solid or liquid caused contraction of the muscle. The nerve was more sensitive to electrical stimuli also. These experiments show that ions have a marked effect on the irritability of nerve and muscle, but not enough has been learned about contact irritability to warrant further conclusions.

When these salts were injected subcutaneously into rabbits they had a like profound effect.[13] Ten cc. of $^m/_1$ sodium citrate solution caused general muscular twitchings, tetanic contractions of the limbs and sometimes general convulsions, reflexes were exaggerated and incoordination of the hind legs was noted. The twitchings began at once at the site of injection, and in ten or twenty minutes on the other side of the body. With repeated smaller doses of the solution, 5cc. daily for a month, a chronic state of hypersensitiveness was produced, and it lasted for a month after the administration of the salt had been stopped.

The action on the intestine of these same salts in purgative doses was studied in rabbits.[13] The rabbit was anesthetized with morphine and its intestines exposed. When the salts were given by mouth or subcutaneously, greatly increased peristalsis was seen after ten or fifteen minutes. The solution was also injected directly into the lumen of the intestine with a similar result. About 30 cg. of sodium citrate (10 cc. $^m/_8$ solution) was needed. One or two cubic centimeters injected into a vein was as effective, and it acted in one or two minutes. In other rabbits used as controls without morphine or laparotomy, the salts purged in about an hour. The stools were from two to six times the normal amount and were semi-liquid. In the rabbits whose intestines were examined there was always excessive secretion, so that within twenty or thirty minutes, the intestine contained much clear yellow liquid that was not bile. Loops of intestine isolated by ligature showed the same increased secretion. Calcium, too, showed its usual inhibition. The active peristalsis due to the purgative salt could be al-

most entirely suppressed by the injection of a like amount of $^{m}/_{8}$ $CaCl_2$. When the calcium chloride was injected into a vein, the effect in checking peristalsis was noticed within one or two minutes, and within ten to twenty minutes after injection subcutaneously or directly into the lumen of the intestine. Calcium chloride was more effective in stopping peristalsis than chalk.

If the purgative solution was painted upon the peritoneal surface of the intestine it caused a great increase of peristalsis almost immediately. This was promptly stopped by painting a solution of $CaCl_2$ upon the same part of the intestine. In one experiment this alternate stimulation and suppression of peristalsis was repeated sixteen times without any apparent decrease in the effect. Barium chloride, also, acted here as it did elsewhere. It was by far the most powerful, and its poisonous effect was often shown by the death of the rabbit. Barium chloride is used as a purge by veterinarians, the hypodermic injection of a gram being enough to purge a full-sized horse. In the rabbit if a drop of $^{m}/_{8}$ $BaCl_2$ solution was put on the intestine, the circular fibers contracted and formed a deep, ring-like depression, as if the intestine were ligatured. This ring of contraction then travelled down the gut. To counteract the barium chloride about forty times as strong a solution of calcium chloride was needed.

Other experiments with the frog's gastrocnemius show that the presence of oxygen has a marked influence on the muscle.[14] In an atmosphere of oxygen the irritability of muscle persisted for a much longer time than in air, usually lasting for forty-eight hours. If the muscle was kept in air rigor mortis came on within a day; in oxygen there was no evidence of it for three or four days, that is, until the muscle was destroyed by putrefaction. Fatigue is much delayed in oxygen, and if a fatigued muscle is allowed to rest in oxygen it recovers from the state of exhaustion.

Although the aim of this paper is primarily to call attention to experiments, it seems desirable to give a short synopsis of Mathews'[15] conclusions as to the nature of nervous impulses. He says that the transmission of an impulse is associated with the temporary gelation of successive particles of nerve protoplasm, that in fact this wave of gelation *is* the impulse. This gelation is due to electrical change. In motor nerves it is induced by negative electricity, whether in a direct current or in charges of anions. Irritability is increased by conditions that facilitate gelation. These are negative electricity from proximity to the negative pole of a current (which explains katelectrotonus) or from a preponderance of anions. Irritability is lessened or inhibited by conditions that tend to prevent gelation. These are a preponderance of cathions, or proximity to the positive pole. Ions act electrically rather than chemically. In general, all anions stimulate or increase irritability of motor nerves, all cathions depress or inhibit irritability. While the quality of the effect depends upon the sign of the charge, the different quantitative effects of the various ions depend upon the amount of the charge, which varies with the valence, and also upon the ease with which the ion parts with its charge, in which respect ions vary extremely. The algebraic sum of all these factors determines whether a given salt, or rather a group of ions, will depress or stimulate, and how great the resultant effect will be. This theory is very fascinating, and more work that bears upon it is eagerly awaited.

Much other work has been done along these lines, and one is tempted to go no and recount many experiments on various tissues, but for fear of presuming too much upon your patience I will mention only a few results with some embryonic forms.

Of course there must be some general laws governing the action of all these ions. If these laws can be discovered, the results may be far-reaching. A decided step in the right direction seems to have been made and the effect of ions can be foretold at least in their action on one form of protoplasm.

The eggs of a certain marine fish after fertilization[16] were washed in distilled water to remove the salts. They were then put into solution of known composition. It was found that every solution of a single salt had a poisonous effect, and that the eggs died after a time. The development was carefully watched to determine the least concentration that would kill in thirty-six hours, also in sixty-four hours. To learn the comparative effects of cathions it was necessary to eliminate the effect of the anion. This was accomplished by using the various cathions in combination with the same anion, and chlorides were used for this purpose. The cathions used were K, Na, Ba, Ca, Al, Zn, Fe, Co, H, Cu, etc. It was found that the toxic effect of the cathions varied inversely as their solution tensions. To test the anions it was necessary to eliminate the varying effects of different cathions. This was done by using salts of sodium, those used were the cyanide, hydrate, iodide, bromide, chloride, oxalate, acetate, sulphate, etc. Here, too, the effect was inversely as the solution tension.

Combining the two series of results the effect of any electrolyte is inversely as the sum of the solution tensions of its ions. This law makes it possible to get a formula for comparing the activity of salts that do not have a common ion, provided the solution tensions are known. For example, given that $^{n}/_{3000}$ HCl will kill in twenty-four hours, what strength of KI will accomplish this result? The calculated result was 0.189 n KI, the result found by experiment was 0.175 n KI, a difference that is within the limits of experimental error. Perhaps further work will be necessary to firmly establish this law, but it is very interesting as a mark of scientific advance, in that it is possible to have a formula for the effect of the various ions on at least this form of protoplasm.

Another series of experiments has brought out some very interesting facts in connection with the development of eggs.[17] The sea urchin is an animal in which the sexes are separate and in which parthenogenesis is unknown. In sea water unfertilized eggs may begin to segment, but the process never goes beyond the earliest stages represented by a group of a few cells. The fertilized egg in sea water almost immediately forms an egg membrane that enclosed the embryo. In the various other solutions tried, eggs that had not been fertilized did not develop this egg membrane except in solutions of calcium chloride and a few other salts, all of which tend to coagulate protoplasm. In these solutions, however, it was not found possible to have the development of the embryo go far enough to be significant.

To eliminate the possibility of chance fertilization as much care was used as in a surgical laparotomy. The dishes and instruments were sterilized, the females were carefully washed in distilled water for a considerable time (distilled water is quickly fatal to the spermatozoa), the eggs were removed by operation, and a very careful and complete series of controls was tried in every case to avoid all the different chances of error. The technic was so effective that no instance of chance fertilization was ever found. With these precautions efforts were made to find something that would cause parthenogenesis. Solutions which are not in themselves too poisonous, and which have a much higher osmotic pressure than sea water were found to answer the purpose. At first the eggs were left in such a solution indefinitely; they did not develop but died. Finally it was found that if the unfertilized eggs were put in a mixture of equal parts of sea water and 2½ n $MgCl_2$ for two hours, and then were put into ordinary sea water, they went through the morula, blastula and gastrula stages, and formed plutei which lived for several days. Plutei are freely swimming forms with an endoskeleton, and one metamorphosis subsequently completes the development.

In a laboratory it has not yet been found possible to have fertilized sea urchin's eggs develop beyond this point, probably because of microorganisms in the sea water. Although the plutei looked exactly like perfectly normal ones, there were some points in which the development differed from that of the fertilized eggs. The fertilized eggs form plutei in about twenty-four hours, the plutei swim about at the surface of the water, and practically every egg develops to this point. An egg membrane is always formed very early. The parthenogenetic eggs develop more slowly, in forty-eight hours or more; they do not develop an egg membrane, and this leads to the production of bizarre forms of irregular shape, due to the fact that the cells are not properly bound together; the plutei do not rise to the surface of the liquid, but swim around near the bottom of the dish; a much larger percentage of the eggs die. The striking fact, however, is, that many do develop into plutei that look exactly normal and live about as long and develop about as far as do the fertilized eggs. Solutions of non-electrolytes of equivalent osmotic pressure, such as cane sugar or urea, are as effective as the $MgCl_2$ when used in the same way. Therefore the effect is not the peculiar action of ions.

The eggs of a certain marine annelid, *Chætopterus*,[18] could be made to develop parthenogenetically, at least to a point where free swimming embryos were formed, in the same way and also by treatment for several minutes with sea water to 100 c.c. of which less than 0.4 g. of KCl had been added. Moreover, they developed when left permanently in 100 c.c. of sea water to which 0.007 g. of HCl had been added. It has long been known that a certain form of crustacean, *Branchippus*, can be grown in fresh or sea water, and that when it grows in sea water it assumes such different characters that it had been classified under another genus. Furthermore, in fresh water fertilization is necessary for the development of the eggs, while in sea water parthenogenesis occurs. All this seems to mean that the egg has within itself the power of development, but something from outside is necessary to start the process. Withdrawing water from the egg by osmosis may accomplish this, and also in some forms the presence of certain ions in certain concentrations, which act catalytically, such as KCl or HCl in the annelid mentioned. Perhaps the sea water acts on *Branchippus* eggs in both of these ways.

This paper has presented a somewhat disconnected mass of experiments, but they seem to me to be of great interest. Some facts which have long been known, such as the aggregation effects seen by Darwin in the sun-dew and in other plants also, and the profound change in the morphology and development of the *Branchippus*, assume a new importance. They are no longer isolated phenomena, but are seen to be but illustrations of quite general properties of protoplasm. The protoplasm itself, so long mysterious, is yielding its secrets to the study of colloids and physical chemistry. The study of the effect of ions upon protoplasm has advanced so far that general laws governing their action have already begun to be formulated. Practically all of the experiments have been verified by different observers working under different circumstances in different places, so they are pretty well established.

Work along other lines, such as the ferment action of colloidal solutions, the effect of ions on the kidneys, on nerves, etc., has given results as interesting, but this paper has already reached a sufficient length, so I will not mention them. Work in this field is full of promise; it is extending our knowledge into fields that a few years ago were called "unknowable," and it seems sure to exert a very great influence on the science of medicine.

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MEDICAL PROGRESS.

MEDICINE.

Etiology of Toxic Erythemata.—It seems almost impossible to reach any positive grouping manifestations of erythematous skin diseases. JAY F. SCHAMBERG (*Jour. of Cut. Dis.*, October, 1904) makes a laudable effort to reach some tentative working basis for such a classification. (1) Bacterial and protozoal toxins. (2) Ptomains. (3) Leucomains and other metabolic poisons. (4) Drugs. It seems probable that in scarlet fever, measles, rubella, smallpox, typhus, influenza, pneumonia, malaria, gonorrhea, rheumatic fever, cholera, typhoid and so on, rashes are due to products enumerated under the first group. In certain instances, viz., where the exciting agent of the disease is found present in the affected cutaneous tissue, there is proof positive that there is relation between the two. This has not yet been proven definitely for the rashes occasionally seen in purpura and malaria. Under this group also are to be classed the rare urticarial eruptions sometimes seen in patients suffering from circumscribed abscesses, deeply situated. Group 2 comprises the basic organic alkaloids which are produced by the action of bacteria on nitrogenous matter. Vaughn classes them as follows: (*a*) Muscle poisoning; (*b*) fish poisoning; (*c*) meat poisoning; (*d*) milk poisoning; (*e*) cheese poisoning; (*f*) vegetable poisoning. The poison occurring in muscles is not a putrefactive product, for it cannot be found after decomposition has begun. Fish poisoning may result from eating certain species of fish which are always poisonous; from eating fish which are poisonous during spawning season; from eating fish which are affected with bacterial disease and lastly those which have undergone putrefactive change. Ergotism and pellagra are the best examples of vegetable food poisoning. The leucomains belong to two chief groups, the uric acid group and the kreatinin group. Brunton believed that the intellectual apathy seen after overeating is in part attributable to peptones. The author endeavors to show that nearly all of the diseases included in the erythema family, are produced by the presence in the circulating fluids of the body of a chemical poisoning. That these poisons have very widely dissimilar origins is unquestionably true, and yet so closely kin are they as to be almost indistinguishable by chemical analysis. From fifteen to thirty per cent. of patients injected with horse serum develop eruptions. The history of these cases is strikingly similar to that of the exanthemata. The author concludes that it is justifiable to reason by analogy that nearly all cases of erythema multiforme and nodosum, urticaria and purpura, are the results of the circulation of chemical poisons. Even on close examination of the urticarias of nervous origin, it seems probable that these are due to chemical rather than to vasomotor changes.

Early Diagnosis of Pulmonary Tuberculosis.—That the profession must go back to old and well-tried methods—clinical history and physical examination—in making the early diagnosis of this disease, is the opinion of W. F. CHENEY (*Am. Med.*, October 22, 1904). Of the newer methods, sputum examination does not inform early enough; tuberculin may give a reaction when no active tuberculosis is present, and may fail to give a reaction when active tuberculosis is really present; while the X-rays may confirm what physical examination has already discovered, it does not reveal anything that cannot be found out in other ways. Sources of error in diagnosis may be set down as three: (1) Preconceived ideas,—the physician's mind is made up beforehand that the patient has or has not tuberculosis. (2) Inattention to details. The changes that are dealt with in the early stages of tuberculosis are slight, and it is by many little things that by themselves mean nothing, but put together mean everything, that a diagnosis must be reached. (3) Lack of persistence in the examination is often at fault. One investigation is not sufficient, and the evidence must be gone over several times.

Sclerosis and Dilatation of the Coronary Arteries of the Right Heart by Digitalis.—A case is reported by T. V. OPENCHOWSKI (*Berl. klin. Woch.*, October 3, 1904) of rheumatic endocarditis and endarteritis with complicated valvular lesions. On two occasions when given digitalis, the symptoms of broken compensation were aggravated in each instance. The author made a diagnosis of dilatation and sclerosis of the right coronary artery and this was later confirmed by autopsy. Openchowski some years ago advanced the theory that digitalis manifests a tonic action on the left heart, by distending the left coronary artery and at the same time weakens the workings of the right ventricle, by contracting the right coronary artery. The case noted afforded an opportunity of demonstrating this for the first time on the human subject. The indiscriminate use of digitalis is therefore ill-advised and may lead to serious overtaxing of the right ventricle.

Does Increased Molecular Concentration of the Blood Warrant a Diagnosis of Bilateral Kidney Disease.—This subject is discussed by A. LOEB and C. ADRIAN (*Berl. klin. Woch.*, September 26, 1904), who report a case of carcinoma of the left kidney, with the right perfectly normal and a freezing point of the blood of 0.635° C. They believe that this concentration of the blood in spite of the efficiency of the right kidney, was caused by the suddenness with which the additional work was thrown upon it through the rapid growth of the tumor of the other kidney. They conclude that unilateral kidney disease (excluding other causes) can exist together with increased molecular concentration of the blood, and that it is not justifiable in cases in which a lesion of one kidney can be proved, to conclude that the other organ is also diseased, because the molecular concentration of the blood is raised.

SURGERY.

Nerve Blocking to Prevent Amputation Shock.—It has been claimed that shock in major amputations could, to a large extent, be avoided by the cocainization of nerve trunks previous to their division. For, as stated by Cushing, this injection prevents the conduct of those impulses resulting from the trau-

matic insult which otherwise, by acting reflexly through the medullary centers, might become the chief factors in the production of shock. H. B. Gessner (*Am. Med.*, Sept. 24, 1904) reports two successful cases in which this method was tried. The first patient was a man suffering with tuberculosis of the right knee and femur, with partial anchylosis. Amputation was decided on through the middle of the thigh and as the posterior flap was being made, the great sciatic nerve was identified. This was infiltrated with 25 mg. of a two per cent. solution of cocaine hydrochlorate, and then divided at the same level. After the amputation was completed, the great sciatic and internal saphenous nerves were injected in similar manner on being drawn out for shortening. The pulse fell from 80 to 62 when the operation was finished. The other operation was performed for condrosarcoma of the right tibia. In this instance only a one per cent. solution was employed with equally good results. There was a later rise in pulse which may have been due to "delayed shock." In neither case did the blocking have any bad effects, and the time required ought to be less than five minutes.

The Iodine Treatment of Suppuration.—Excellent results in the treatment of this condition have been attained by W. S. Pugh (*Am. Med.*, October 15, 1904), who has used in a variety of cases and calls attention to the cheapness and other good qualities of the drug when compared with the many antiseptic preparations on the market. Scalp wounds, which are usually dirty, can be cleaned with normal saline solution and then dried. After being swabbed out with iodine, they may be sutured and good union will usually be obtained. In ulcers of the leg it acts as a germicide and a deodorant, stimulates the formation of granulations, and, even in the case of large ulcers, promotes healing when combined with rest in bed. Inguinal adenitis was treated by free incision, the pus swabbed by means of dry sponges and then the iodine applied to every part of the wound. Where suppuration was not too extensive, closure of the wound with hoops of union by first intention was tried, and with success in many cases. Upon vaginal discharges, particularly those due to the gonococcus, iodine exerts a favorable influence. The discharge ceases in many cases, after a few swabbings. Old tuberculous sinuses following upon tuberculous glands of the neck are very favorably affected and in a number of other surgical conditions it will be found of great value and should always be tried.

Suture Material.—While the field of surgical pathology, bacteriology, and physiology has been widely extended, the more technical aspects have been neglected during recent years, according to v. Mikulicz (*Deut. med. Woch.*, September 29, 1904). Silk and vegetable fibers are the most prone to give rise to wound infection in places where the entire absence of germs from the wounds cannot be guaranteed. Metal wire is strong, lasting and antiseptic, but cannot well be used for buried sutures. Silkworm gut presents similar characteristics. Catgut and other animal sutures can be made perfectly aseptic, but they are too rapidly absorbed. The author suggests the use of tanned catgut, which is prepared as follows: The strands are wound on glass plates and then immersed for twenty-four hours in a five per cent. aqueous infusion of quebracho bark. Sterilization is done by the Hofmeister method. By this treatment the material gains in tensile strength and its absorption is delayed for at least four weeks, although the process may not be complete for eighty to ninety days. The author has used this material for abdominal sutures after gastric and intestinal operations, and found it very satisfactory.

PATHOLOGY AND BACTERIOLOGY.

Rhinophyma.—The extraordinary tumors, which occasionally develop upon the nose, are matters of interest from a clinical standpoint and more particularly from the pathological. G. W. Wende and Charles A. Bentz (*Jour. of Cut. Dis.*, October, 1904) report the pathological analysis of five separate tumors occurring in the same patient. The pathological condition presented occurred in a man sixty-nine years old, of German parentage, who had lived in the United States forty years. An excellent photograph of the lesion portrays the tumor as extending from the tip of the nose downward, across the mouth to the center of the chin. He refused to have any investigation practised, because he believed the presence of the tumor prevented him from incurring other infections. The measurements were as follows: Largest diameter from the base, 4¾ inches; transversely, 3¼ inches; at right angles with the face, three inches. In addition to this large one, there were eight smaller tumors on the nose, the the larger of which were pedunculated so as to oscillate freely when the head moved. There was an atrophy of the epidermal layer of the skin over the tumor, the outer layer having disappeared. Huge comedones obstructed many dilated granular orifices. These would refill gradually and discharge the foulest matter. The patient refused treatment until he passed into a comatose condition, when Dr. Bentz made the following notes: Indurated mass between zyphoid and naval, mass painful on palpation, probably hepatic cirrhosis. Five of the nine tumors on the nose were removed including the greatest, which was about twenty-five years old, and the most recent, which had developed only six months before death. The section of these tumors formed an invaluable means of following the history of their development. A most striking change was the enlargement of the sebaceous glands. This was due to the formation of retention cysts. The other marked feature of the case was the extraordinary connective tissue hypertrophy. No mast cells were found, but micrococci and bacilli were plentiful, the latter simulating those described by Gilchrist as occurring in acne vulgaris. Sections of the second smallest tumor stained with osmic acid showed that the epidermis had undergone passive changes, due to an admixture of fat; it was about twice its normal thickness. The pigment of the rete was greatly increased and the horny layer was very much thickened. The sections stained widely on osmic acid, showing that a large part of the increase in size was due to fat. The term adenoma cannot properly be applied to these tumors, because there is no numerical increase. The development of the growths seems to have been dependent very largely upon a dilatation of the ducts of the sebaceous glands combined with extensive fibrous tissue proliferation. The *Demodex folliculorum* was not especially searched for, although short thick bacilli in large numbers were invariably seen in the glandular ducts.

Size of Urinary Stones in Egypt.—There is no question that the Nile country is the home of urinary concretions. Frank Milton (*Lancet*, October 1,

1904) reports the history of 159 cases of stones weighing 50 grams and over. His associate, H. M. N. Milton, operated on 113 of these. They are consecutive cases and altogether unselected. All the patients were over fifteen years of age with the exception of nine. The largest stone weighed 995 grams. The largest stones treated as indicated were as follows: By lithotrity, 452 grams; by suprapubic lithotomy, 292 grams; by perineal lithotrity, 387 grams; by left lateral lithotomy, 90 grams. The results were as follows: Lithotrity cases, 84, deaths five, mortality 5.9 per cent. Perineal lithotrity cases, 47, deaths seven, mortality 14.9 per cent. Suprapubic lithotomy cases, 22, deaths 8, mortality 36.3 per cent. Left lateral lithotomy cases, 6, no deaths. The mortality for the cutting operations was 18.9 per cent. For the crushing operations 5.9 per cent. The size of the stone is a very important factor since a patient with a large stone almost invariably has secondary degeneration of the kidneys. The English operators in Egypt are very much in favor of the crushing operation, although they admit that its success depends very largely upon the experience and skill of the operator. It is a mistake to believe that the Egyptian stones are frequently very soft and that they bear a relation at all constant to chyluria. It is true that the soft phosphatic stones do occur in Egypt. Of the 159 cases, not one had chyluria.

Case of Banti's Disease.—Very little is known of the pathology of hepatic cirrhosis with splenic enlargement, the complex set of symptoms, which have been designated Banti's disease. J. F. Strick and J. F. Hodgson and W. B. Anderson (Lancet, October 1, 1904) gave a very detailed history of a case occurring in a married woman, forty-six years old. She had a fall which had produced severe epistaxis. There were profound anemia and a prominent abdomen. The woman believed that at the time of her recent confinement everything had not been taken out of her uterus, and in this manner accounted for the swelling. There had been an unusual amount of liquor amonii and the midwife had said that the baby was drowned in it. There was no sign of syphilis, she having had eleven children with no miscarriages. The skin was shriveled; had no red tint and resembled that seen in malignant cachexia. Pigmentation, however, was marked. Atrophy of every tissue had taken place, so that she was reduced to skin and bone. The spleen, which was immensely prominent, was tender to the touch. It almost touched Poupart's ligament. Its surface was smooth and its consistence firm. The liver was only slightly enlarged, but it was tender. There was no ascites or edema anywhere. The glands were not enlarged. She suffered from no cardiac palpitation. The pulse was weak, soft and varied from 100 to 110. There were 2,380,000 red cells, 4,640 white, the hemoglobin being 36 per cent. The reds were normal. Melena occurred only a few times. Several days before death, her blood showed red cells 1,140,000, leucocytes 3,200, hemoglobin 20 per cent., poikilocytosis marked. She died just five years after the splenic enlargement had been found. Post mortem showed 32 pints of fluid in the abdomen. The spleen was fourteen inches long, 8 inches across and weighed 9 pounds. It was red in color and the fibrous tissue markedly increased. There were patches of cicatricial tissue which looked like infarcts. The capsule was markedly thickened, the liver enlarged, yellowish-brown and smooth. The stomach wall showed no lesions. Bacteriological examinations of the blood taken anti mortem were negative. The microscopical findings of the spleen showed enormous overgrowth of fibrous tissue. The Malpighian bodies were diminished in number and size. Very few red corpuscles were seen. There was much pigmentary degeneration throughout. The liver was also characterized by immense fibrous tissue proliferation. The lobules were, however, not constricted by it, but were rather disorganized, for the proliferation was intercellular. The bile ducts were normal as well as the hepatic arteries. In neither spleen nor liver was there any reaction with iodine or methyl violent. No bacteria were found.

Experimentally Produced Epithelial Metaplasia in the Stomach.—The results of experiments in rabbits and the relations of epithelial metaplasia to carcinoma, as demonstrated by cases reported in the literature, are discussed by G. Futterer (*Jour. Am. Med. Ass'n*, October 15, 1904). The rabbit experiments were undertaken for the purpose of studying the relations between mechanical irritation and the development of carcinoma. In a series of experiments on the stomachs of 94 rabbits, a genuine epithelial metaplasia was found in five. In each case a piece of mucous membrane of the stomach was resected and, subsequently, hypodermic injections of a solution of pyrogallic acid made to reduce the percentage of hemoglobin and thus prevent the healing of the defect, the edges of which were exposed to friction by solid food. The animals were killed at varying periods, but many animals had died owing to improper care. The five cases in which examinations showed metaplasia, the latter were undoubtedly genuine epithelial, as an ingrowth, an implantation and a development from a germinal deposit could be excluded. There was no fistula in any of the cases. In all cases the metaplasia was at once followed by a downgrowth. The latter has occurred under considerable growth pressure, as shown by the invagination of the muscularis mucosæ through the greater part of the hypertrophic muscularis propria, and the invagination of the rest of that layer for quite a distance outside that organ. The metaplasia has been followed by what may be termed a practically unlimited proliferation of the squamous cells. Such a downgrowth and an unlimited proliferation of cells are the two principal characteristics of carcinoma. The term metaplasia can only be used here for the metamorphosis of the columnar into the squamous cells, for there is no more metaplasia going on in the pegs, the products of metaplasia. The epithelial cells have nowhere broken through the muscularis mucosa, and the most characteristic peculiarity of carcinoma, the ingrowth into connective tissue, is absent. What would have become of the strands, filled up to the very end with squamous epithelial cells, if the animal had lived longer, cannot be said and further experiments cannot show it. These are the first cases of epithelial metaplasia on record, if a metaplasia in the bladder, which Lubarsch mentions without describing, may be excepted. It is to be remembered that structures considered to be characteristic of the ectoderm have been produced from entodermal tissues, a fact which would make it impossible to uphold a sharp division of the germinal layers. The cases which have been reported, concludes the author, make it clear that epithelial metaplasia is very often followed by the development of a carcinoma, but what the real relations are between

metaplasia and carcinoma is a matter that only can be made clear by further experimental work.

THERAPEUTICS.

Therapeutics of Gout.—Robin (*Bull. gen. d. therap.*, No. 16) discusses three types: (1) The acute attack of gout; (2) subacute gout; (3) chronic gout. Colchicum and its active principles is the chief drug. Granules of colchicine, 0.001 gram—four granules at the onset, or during twenty-four hours. Tincture of the seed or root is effective, but variable in strength. To obtain results, 40 to 60 drops a day in doses of 10 to 15 drops at a time is necessary, if a visceral manifestation preceded the articular attack or venal symptoms. The action of colchicum can be aided by local applications, and hot air or steam. Sodium salicylate is useful in subacute gout. In chronic gout, hygiene, regulation of life and drugs are all equally important. In diet, red meats should be excluded. But two-thirds of the diet should be made up from white meats. Of drugs, strychnine and arsenic are valuable.

Treatment of Constipation by Olive Oil.—Kussmaul introduced the injection of olive oil for the treatment of constipation a great many years ago, but the value of the procedure has not been recognized either in England or America. George Hershell (*Lancet*, October 1, 1904) states that while without question it is most valuable in the treatment of cases due to spasmodic conditions, he has found that the methodical use of oil injections, is one of the best means of treating mucomembranous colitis. For some unknown reason it serves to reduce the amount of mucus in a very rapid and satisfactory manner. A third indication for its use is in intestinal atony, which is being treated by electricity. All purgatives should be abandoned and during the first week it is well to remember that there is apt to be a great deal of trouble because the newly inaugurated electrical treatment has not yet become effective. The author injects from three to ten ounces of warm olive oil into the rectum at bedtime. This is retained during the night and usually gives a satisfactory result in the morning. It is important that the oil should be introduced very slowly; otherwise it will be at once expelled. To this end it should be given by means of gravity and not with any form of bulb syringe. A rubber douche bag should of course not be used, but a glass one, and it should be raised only just high enough to allow the oil to flow. It is noteworthy that the nozzle should have an opening in it much larger than that usually employed in aqueous enemata, otherwise it will be blocked by the oil.

Gersuny's Method in Ozenatous Atrophic Rhinitis.—Most rhinologists accept the theory of Taufal, that ozena is due to the length of the nasal cavity in consequence of a defective development of the turbinated bones, this having taken place in such a manner that the mucus is not able to be gradually expelled forward as under normal conditions. This settles on the walls, obstructs the cavity, then dries and becomes putrid. Gersuny, of Vienna, in 1900, published a new method of prothesis, by means of injecting melted vaselin in the tissues, others undertook to build up the atrophied turbinated bones by the use of paraffin. A certain amount of elasticity is essential to the mucous membrane covering the bones to successful operation. This is best determined by the use of a solution of adrenalin applied to the mucous membrane, and any diminution in volume noted. L. Guarnaccia (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July-August, 1904), maintains that in all operable cases a disappearance of the most objectionable symptom, viz., the fetid odor, takes place, also an amelioration of the other symptoms, and at times a complete cure. His technic is to employ paraffinated vaselin, which has a melting point of 45° C., sterilized by placing in a kaolin capsule at a temperature of 100° C., for half an hour. The nasal fossæ are cleaned of crusts by tepid formalin ½ per cent., and the use of absorbent cotton soaked in hydrogen peroxide. Because of the artificial resistance caused by the vascular constriction following the use of cocaine and the very slight discomfort caused by the operation, its use is best omitted. A Pravaz syringe holding 2 c.c. with a straight needle 4.5 cm. in length is employed. For a few minutes previous to the operation, the syringe, filled with vaselin, is kept in water at a temperature of 46° to 48° C. By the aid of a large Duplay speculum the reconstruction of the turbinated bones should be begun by introducing the needle at an angle of 40 degrees into the posterior third. Directly after the removal of the needle an absorbent cotton tampon soaked in cold sterilized water should be applied to the nares. This operation should not be oftener than once a week. To completely modify one turbinated 4 to 6 gms. are necessary. The bad effects claimed by many seem due to too large an amount injected at one time, or to the high temperature employed.

Treatment of Medical Hemorrhage.—Medical hemorrhage has been defined as bleeding, which has occurred at a site where hemostatic forceps cannot be applied. Francis Hare (*Lancet*, October 1, 1904) gives a further history of cases of hemoptysis in which the bleeding has been stopped almost instantly by amyl nitrite. He had already commented favorably upon the method in the *Lancet*, August 20, 1904. Thirteen cases, therefore, are brought under consideration with the following conclusions: Twelve ceased within three minutes, the thirteenth having continued to bleed for ten minutes. These were all cases of hemoptysis and the nitrate was given by inhalation. It certainly can do no harm to break a pearl under the nose of a patient suffering from this form of medical hemorrhage, and if this rather insufficient report is to be allowed to give weight, the treatment may be considered capable of much good. The drug acts, as pointed out by the author, by suddenly lowering the peripheral resistance in the systemic arterioles, thus reducing the blood pressure in the pulmonary circulation indirectly through the fall of blood pressure in the left auricle. It is a singular fact that in these thirteen cases, there has been no recurrence of the hemoptysis. This is the more singular when one considers that the action of the drug is extremely evanescent. In but one case did the hemorrhage occur within two hours, and in half of the cases there was no recurrence. It would seem that the period of time during which there is a diminished arterial pressure is sufficiently long for coagulation to become well established. Arguing by analogy, it becomes obvious that in the absence of amyl nitrite, plunging the patient into a very hot bath, would have the same effect. The mouth and nose should be protected from inhalation of the hot air, indeed cold inhalations should be given, if possible. By a reversal of the processes which caused asthmatic dyspnea, migraine and metrorrhagia, these processes should theoretically, at any rate, be limited or entirely abated.

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A WEEKLY JOURNAL

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SANITARY ASPECTS OF THE RAPID TRANSIT SUBWAY.

To the people of New York City the opening of the Rapid Transit Subway, on October 27, was an event of the greatest interest. It was the beginning of a new method of transportation in a city where ordinary transportation facilities had failed utterly to carry the people with speed, comfort or decency. It has been said that we are entering upon an era of tunnel building, and that if the present sample of subway proves as successful as expected it will be only a question of time before every important avenue in Manhattan will be undermined and tunnels will run under the harbors and rivers to every outlying section of the city. At the prospect of so vast a development of underground travel it is natural that the public should scrutinize with more than ordinary curiosity the section of road already built. The section is large enough, and has now been in operation long enough, to give a popular idea of what the rest is likely to be. In a strict sense the road is on trial. The public is the judge. Approval means patronage and a generous patronage means building of more roads.

At the present moment public interest in the subway seems to be focused upon the question: "Is it sanitary? Is this newest form of travel free from conditions which may injure the public's health?" New York has had about two weeks of opportunity to judge of conditions as they are and will be in the new subway. There are, of course, certain improvements that will surely take place to ameliorate minor inconveniences. The sanitary conditions, however, are probably at least as good now as they will ever be, for with the collection of dust and dirt in the lapse of time, hygienic conditions will rather deteriorate than improve.

Apparently the chief concern of those who are anxious about the salubrity of the subway relates to the quality of the air. A considerable amount of dissatisfaction is being expressed with respect to the ventilation. Letters of criticism appear daily in the public press, in which patrons of the road point to various fancied causes of alarm. It is said that the air of the subway is warm and damp, and, consequently, ideal for the existence and propagation of bacteria; that the principal agencies which make way with disease germs in the streets, sunshine and rain, are not compensated for by adequate provision for scrubbing, flushing and disinfecting in the subway, except at the stations; that disagreeable odors, heat and dampness, not to speak of unpleasant physical symptoms, such as depression, headache, nausea, accelerated respiration and giddiness occur and show that the air is not renewed with sufficient frequency. That the introduction of fresh air through the piston action of the trains is impossible on a four-track road; that the cars represent the most primitive construction so far as ventilation is concerned; that the oxygen in the air is sometimes as low as 11 per cent., instead of being about 20 per cent. as it should be; that the amount of fresh air in some of the deeper sections is so small that an accident which would delay a crowded express for a half hour would result in wholesale suffocation, etc.

As to the justice and injustice of many of these criticisms there is thus far no official or material proof. Undoubtedly the air in the subway is stuffy, and has been warmer and damper than the air outside in the period since the road was opened, and it has often been unpleasantly close in the cars. That extremely sensitive persons and those in delicate health may be disagreeably affected by these conditions, as well as by the odors of oil and paint, which have prevailed, there is no room to doubt, but such sensations as have been experienced might equally well be attributed

to the suffocating sense which comes to many people when they know they are underground.

If it be proven that there is a marked reduction in the amount of oxygen, distinctly serious conditions may be developed, for it is believed that diminished oxygen, sudden changes in pressure, of moisture and of temperature in the inspired air, all lead to respiratory difficulties. With the present increase in the incidence of pneumonia, it is not an encouraging prospect to find that just where New Yorkers are likely to be crowded together, there is a dangerous accessory condition for the production of this dread disease.

There are certain features of the new mode of rapid transit that cannot but appeal to the modern sanitarian. The complete absence of sunlight removes one of nature's best safeguards against the undue multiplication of bacteria. Direct sunlight is the best bactericide that we have. In the comparatively warm, moist air of the subway, bacteria of disease are likely to live much longer than they would in the upper outer air. The question of cleanliness then becomes extremely important, and if serious danger from the spread of infectious disease is to be avoided, the cars must be frequently disinfected and must be exposed every day for many hours to the direct effect of sunlight in the open air.

It seems especially unfortunate, in the light of this danger from dirt, that the introduction of a feature of a subway-station decoration not originally included in the plan, and which has only been called to public attention since the formal opening of the tunnel, should have been permitted. We refer to the advertising signs at the stations. The stations were magnificently built for the ready and effective maintenance of sanitary conditions. The perfectly smooth tiling, the deliberate absence of ornamentation of any kind that would invite the clinging of dust particles, the rounded corners that facilitate thorough cleansing, all remind one of the modern hospital in a way that is most gratifying. Now comes the unfortunate introduction of a series of advertising signs, made in such a way as almost to invite collections of dust in and around and behind them.

The medical visitor of the days before the regular opening of the subway had happy visions of the easy methods by which stations could be washed out in every part with a hose and the more uncleanly portions rendered hygienic by means of a bucket and mop; but now there is an end of any such prospect. It will be absolutely impossible to clean in and around these signs and they will go on accumulating dust and dirt, which will be raised up into the air at moments when traffic is heaviest, thus rendering the inevitably insanitary conditions of any continuous tunnel railroad even more dangerous than they were before.

Attention to matters of personal hygiene demand equal attention. The vice of spitting must be vigorously rooted out, and the further vitiation of the air by the fumes of tobacco should not be permitted.

The question of the sanitary condition of the subway, now that the subject has become a matter of serious question, should be taken up and studied thoroughly as its weight and bearing demand. The subject is far too important to be left in the realm of conjecture any longer. The interests of the public, of the Rapid Transit Commission and the Interurban Company require that idle speculation should cease and that the facts about the ventilation and the probability of spreading infectious diseases in the subway should be set at rest.

There is only one way to get at the truth and this is by means of a thorough and careful investigation. Experts should be called, if necessary, who have a recognized skill in the use of analytical apparatus and whose business it is to investigate and prevent the spread of disease. These observations should cover all sections of the road and all conditions of travel. The different effects produced by different conditions of weather should not be overlooked.

It would seem that the Department of Health could apparently undertake such an investigation and that a periodic examination of the subway, including sanitary inspectors and analysis of the air, would form a valuable addition to its regular routine work. If, for any reason, the investigation could not properly be made by the Department of Health, it should be undertaken by the Rapid Transit Commission itself. The Commission has ample means for such a study and the results would very likely produce data which would prove of value in its future work.

"DON'T YOU HEAR THE BABY CRY?"

Class legislation is always a difficult matter to attempt, but a little trifle like that would hardly ruffle the serenity of the good dames of Massachusetts, for these most estimable matrons of the old Bay State have been prominent in good works from the time in which they alighted from

their flying broom-handles to deliver their attenuated bodies to the blazing stake up to the present epoch, when their baked beans, fishballs and brown bread have done so much to enliven the murky gloom of the New England Sabbath.

Virtuous and intolerant they have always been; full of good points, which they have invariably insisted in sticking into other people, until the shoulder of Hester Prynne glowed with the scarlet letter of their burning disapproval and Skipper Ireson was tarred and feathered and carried in a cart by the women of Marblehead. But never until this hour have they, as a class, been accused of originality, or have they deviated from the immutable customs of their ancestors, either in the receipt for their doughnuts or in their blind adherence to the bigoted dogmas of the past. Now, however, we learn that a number of women, who have been prominently identified with movements of all kinds for the improvement of the condition of their sex, have incorporated in Massachusetts an insurance company with the avowed object of encouraging maternity by the paying to policyholders of a premium on the birth of children. The scheme is not only new, but is mathematical. Thus the bride with expectations pays $3 monthly assessments. After ten of these monthly assessed payments, which amount, with the initiation fee, to $34, have been made, the assured is entitled to claim a cash payment of $200 on the birth of a living child. If she neglects her opportunities until after the nineteenth payment has been settled she is entitled to $300, which sum increases to $400 after the twenty-eighth, while at any time after the thirty-seventh she can demand a royalty of $500, C. O. D.

Exactly on what plan the arithmetical part of this project is based we do not know. We are not practical actuaries, but it strikes us that unless those eligible have the courage of their convictions in regard to quick sales and small profits, that they would hardly care to enter the pool, and if they did, it is a question if the amount of money on the proposed basis of assessment would hold out to a degree sufficient to meet the obligations. All these schemes, however, seem to belong to those matters that they order better in France. For, this giving of prizes for children while-you-wait and the bonus for large families, is much more adapted to Gaston and Alphonse than it is to Ichabod and Praise-God-bare-bones, and the number of bills looking to the increase of the birth-rate, already introduced into the French Chamber of Deputies, seems to be even greater than the increase of the population itself. Thus one legislator proposes the offering of prizes for large families and the remission of taxes to the happy fathers of many sons. Another interesting suggestion is, that unmarried men shall be ineligible for official positions under the government or municipalities, while the latest bill introduced provides that married men and the fathers of children shall be exempt from military service, and that the French army shall be limited to bachelors only.

The conditions, however, are somewhat different in this country, particularly in the New England States. It has always been claimed that the peasant women of France hoard their money in an old stocking, and the same may be true here, particularly in the seaport towns, the only difference being that in the American case the stocking is invariably a new one. But the "*dot*" is not with us a required stipulation in the marriage contract, and some other reason than a want of money must be found to account for the great preponderance of unmarried women in these rural Eastern communities. According to the last census the unmarried woman comprises 37.4 per cent. of the female population in Massachusetts, while the expression "a Lynn couple," denoting two women and one man, is older than the first census itself, it having, it is believed, originated from the personal observations of Governor Winthrop when he took his English boots to be resoled in that colonial shoe-making center.

What the reason may be for the existence of so many sad, ungathered roses on the New England ancestral tree, it is hard to say. If, as we have been taught, marriages are made in Heaven, then the Massachusetts delegation to the celestial regions must surely have neglected the interests of their fair constituents and have been guilty of "loafing around the throne" to a degree that is more than culpable. For it is here that, after all, the key to the solution really lies. If these worthy, but unpractical, colonial dames would only give up their visionary ideas of paying for their future population on the instalment plan, and remembering the advice of the Hon. Timothy Campbell in regard to the "gondolas," would only seek to marry off these spinsters and then "let nature take its course," they would not have to look in the columns of old *Advertisers* for the names which have been so long historic in that good commonwealth. Let them keep on, and they will, with their Dorcas societies: let them send letters of instruction to the fathers, and flannels

to the mothers, for, anything that will serve to keep alive the babies that have been born will also serve to maintain the population beyond the mere counting of the chickens that are already hatched. Let them instruct young mothers how to take care of their children, how to feed them, how to clothe them, and how to nurse them in sickness, as the death-rate among infants is now abnormally high, but do not let them forget that the curve of old-maidism is also steadily increasing, and that the time has come when some active legislation must be taken in the spinster interests.

What this is to be or what course it may take it is difficult to say. The time has passed when a thousand or two Sabine youths could be injected into the social veins of Massachusetts and it might not be possible to de-Corbin-ize the National Guard, but a State that can successfully raise two such utterly different products as Harvard College and J. Laurence Sullivan has more than enough versatility to accomplish this, or, in fact, anything. The autumnal fruit of New England, too, should not be a difficult crop to market. Strong, energetic, capable, a good housewife, a woman in fact possessed of all the virtues of domesticity, she should not be left to waste her sweetness on the ocean air. Those provincial heirlooms, the feather beds of Massachusetts, made with the live feathers of her native geese, are traditionally soft and warm; the nights on the stern and rock-bound coast are proverbially drear and long; let these good women, with their irrepressible desire to be the ladies of creation, see that the dear *old maid* is no longer left "out in the cold—alone."

ECHOES AND NEWS.

NEW YORK.

Japanese Medical Corps.—Dr. Louis Livingston Seaman, late Major U. S. Volunteer Engineers, delivered an address on his experience while studying the condition of the Japanese Medical Corps during the present war, on Thursday evening, November 10, 1904, at the Calumet Club.

Civil Service Examinations.—The New York State Civil Service Commission announces general examinations to be held December 3, including the following positions: Physician, fourth grade, State hospitals and institutions; resident physician, State industrial school, Rochester. Applications for these examinations must be made on or before November 28. Full particulars of the examination and blank applications may be obtained by addressing the Chief Examiner of the Commission at Albany.

Medical Society of the State of New York.—It is the desire of the Business Committee of the Medical Society of the State of New York to present a good and representative program to the Society at its approaching annual meeting, which comes the last of January at Albany. The Committee, which has already been announced, consists of Drs. Henry Flood, of Elmira, Chairman; A. Edward Davis, of New York; and L. H. Neuman, of Albany, Secretary. The Committee will soon close the program, and before doing so extends an invitation to members and others who may desire to appear upon it to communicate with either member of the Committee soon.

Reorganization of the New York School of Clinical Medicine.—During the past few months there has been a complete reorganization of the New York School of Clinical Medicine, and the following physicians now constitute the Faculty: Professors—*General Medicine*, Drs. Wm. Brewster Clark and Henry L. Shively; *Surgery*, Dr. S. J. Walsh; *Genito-urinary Diseases*, Drs. Wm. K. Otis, Walter Brooks Brouner and John Von Glahn; *Gynecology*, Drs. Augustin H. Goelet and A. Ernest Gallant; *Mental Diseases*, Drs. Emmet C. Dent and J. Arthur Booth; *Dermatology*, Dr. Robert J. Devlin; *Ophthalmology and Otology*, Drs. John L. Adams and George A. Taylor; *Pediatrics*, Drs. Dillon Brown and Henry C. Hazen; *Gastro-intestinal Diseases*, Dr. Robert Coleman Kemp; *Diseases of the Nose and Throat*, Drs. Max J. Schwerd and James S. Waterman; *Orthopedics*, Dr. Homer Gibney; *Pathology*, Dr. E. E. Smith; *Hydrotherapeutics*, Dr. A. W. Gardner. Associate Professors—*General Medicine*, Drs. T. M. Acken and E. L. Kellogg; *Surgery*, Dr. J. Cameron Anderson; *Gastro-intestinal Diseases*, Dr. C. T. Graham-Rogers; *Genito-urinary Diseases*, Drs. T. M. Townsend and Stern; *Pediatrics*, Dr. H. F. Senftner; *Opthalmology and Otology*, Dr. H. E. Cook. A number of instructors and clinical assistants have been appointed, and new appointments will shortly be confirmed. At a recent meeting of the Medical Board, Dr. John L. Adams was elected President; Dr. A. E. Gallant, Vice-President, and Dr. Robert Coleman Kemp, Secretary.

Charities and Correction.—The Fifth New York State Conference of Charities and Correction is to meet at Syracuse, November 15 to 18 next. The conference was organized five years ago by the State Board of Charities, acting in conjunction with representative philanthropic citizens from all parts of the State, and has proved to be a very successful and popular organization. Its objects are to afford an opportunity for those engaged in charitable and reform work to confer respecting their methods, principles of administration and results accomplished; to diffuse reliable information respecting charitable and correctional work, and encourage cooperation in humanitarian efforts, with the aim of further improving the system of charity and correction in the State of New York. To carry out these purposes the conference holds an annual meeting in November of each year. All who have an active interest in the public or the private charitable or correctional work in New York State are invited to enroll themselves as members of the conference and to participate in the discussions and business of the meetings. The public generally is also cordially invited to attend all the meetings of the conference.

Japanese Physicians in New York.—A Japanese imperial medical commission, which has been making a tour of the health departments of the principal cities of this country and Europe, visited the Health Department building at Sixth Avenue and Fifty-fourth Street last week. The commission consists of Dr. Takamine, Professor of Chemistry in the Imperial University at Tokio; Professor Tanva, of the department of pharmacy in the same university, and Dr. Sato, chief sur-

geon at the university. Health Commissioner Darlington personally conducted the Japanese scientists about the building, and explained the workings of his department. Dr. Sato, spokesman for the commission, declared that the department in this city was better than anything he had seen in his tour, with the possible exception of that at Hamburg, Germany. But in Hamburg, he said, the commission is hampered by legal restrictions, that it does not have liberty of action enjoyed by the health officials of New York

Sir Felix Semon and Mount Sinai.—Sir Felix Semon made an inspection of Mount Sinai Hospital last week, and had nothing but words of praise for the institution. Accompanied by Dr. D. Bryson Delavan, the senior attending throat specialist, and Dr. George Leffert», with whom Sir Felix is staying in this city, the English specialist went to the hospital. He was received by Dr. S. S. Goldwater, the Superintendent; F. J. Rieser, the Assistant Superintendent, and the medical staff. Following the inspection Sir Felix said: "This hospital is a tremendous advance over any hospital I have seen. It is the 'acme,' I might say, of hospital perfection. It seems that such accomplishment is only possible in this country, for surely it cannot be done in Europe. You are fortunate in having enormous wealth devoted to such commendable purposes, while we, though we have wealth, unfortunately see it not so commendably applied."

The New Manhattan Eye and Ear Hospital.—The new building of the Manhattan Eye and Ear Hospital, to be erected in Sixty-fourth Street, on a plot of nine lots, just east of Third Avenue, and next door to the Baron de Hirsch Trade School, will be one of the largest, and perhaps the most complete, of the special hospitals of the world. A new structure is needed, as the requirements of the institution have outgrown the accommodations of its present home, at Park Avenue and First Street. In 1903 there were 28,478 outdoor and 2,954 indoor patients; by September 30, 1903, 372,687 patients had been treated since the hospital's incorporation in May, 1869. Plans for the new building, designed by York & Sawyer, have been approved. The cost of the structure will be between $350,000 and $400,000. Ground will be broken before December 1, and it is hoped to complete the building within fourteen months. The edifice will have a frontage of 118 feet and a depth of 125 feet. It will be five stories high. The ground and first floors are given up to the clinics for dispensary work. At the rear of a general waiting room, under a skylight, the superintendent, or one of his assistants, will stand, to sort the clinic patients. All of the first floor other than the general waiting room is given over to the eye department, the two sides of which contain clinics. The second floor is divided through the center, but, instead of having clinics of the same department upon each side, the eastern part is given up to the nose and throat, while the ear department occupies everything on the right of the large waiting room. In the nose and throat clinics the cabinets are arranged in pairs, set out at right angles to the wall, and furnished with gas, electricity, compressed air and plumbing. Each pair of assistants, who will sit at one of these tables with their patients, will be separated from the others by low partitions. Old patients who have already had their cases diagnosed by surgeons will be seated at once on special benches, each one of which has appended the name of the assistant to whom they were assigned at their last visit. Orderlies will keep run of the number of patients waiting for the surgeon and his assistants, and show them in in rotation. Ear clinics are of much the same arrangement, but have in addition ear-testing rooms, which are isolated for sound, and have a range of 25 feet.

Eastern Medical Society.—The Section on Pediatrics of the Eastern Medical Society will meet on Thursday, November 17, at 8.30 P.M., at Clinton Hall, 151-153 Clinton Street. Program: Presentation of Cases; Paper, Chorea-Clinical and Therapeutic Data, by Henry W. Berg, M.D. Discussion by Dr. Joseph E. Winters, Dr. E. D. Fisher, Dr. H. D. Chapin, Dr. Henry Koplik, Dr. Wm. M. Leszynsky, and others.

County Medical Association.—The next regular meeting of the County Medical Association will be held at the Academy of Medicine, November 21, 1904. The following interesting program is provided: (1) Paper: Dangers of the X-ray, by Milton Franklin, M.D. Discussion by Drs. Morton, Albers, Coley. (2) Paper: Medical and Surgical Features of the Russo-Japanese War, by Louis L. Seaman, M.D., Major, U. S. Volunteers. Discussion by Surgeon-general Wyman, Capt. Kerouski and other medical officers.

PHILADELPHIA.

Sanatorium Opposed.—Residents of Mount Airy have petitioned the courts to declare the Dermady Consumption Sanatorium a nuisance and order its removal. The petitioners consider the institution dangerous and also declare that the inhabitants of the tents move about with so little clothing on at times as to amount to a disgrace. Twenty patients are now in the institution.

Oil Plant Injurious to Health.—Numerous suits have been brought by the inhabitants of Marcus Hook against the Sun Oil Company whose plant is said to be injurious to health and also damaging to property. The first suit has been decided by a jury in favor of the plaintiff, a verdict for $1,050 being rendered as damages. More than 200 witnesses were called, 135 testifying for the company that the fumes were not injurious and 70 for the plaintiff that they were. A jury from the United States Circuit Court has since inspected the plant in connection with other cases pending.

Address by Dr. Wiley.—Dr. H. W. Wiley, Chief of the Bureau of Chemistry in the United States Agricultural Department, addressed the Franklin Institute, November 4, on the results of the recent investigations regarding food preservatives. Dr. Wiley said that though most experts regard borax and boric acid as the least harmful of the preservatives commonly employed, the truth of this view must be determined by future experiments. The work already done shows that the miscellaneous and premeditated use of these antiseptics in food is reprehensible. "It is evident that eating small quantities of borax in food, occasionally, would not prove of any lasting injury to the ordinary citizen in good health, but the weak and feeble must be protected, and it is entirely with the grounds of reason that even a very small quantity of an antiseptic of this kind would prove very harmful to a disordered stomach. Similar experiments have been conducted with salicylic, benzoic and sulphurous acids, but the results have not yet been compiled nor have conclusions been drawn. This work is to be continued during the coming year, when it is our purpose to determine the effects of formaldehyde and coloring matter, when added to food, upon health and digestion."

Episcopal Hospital.—Dr. Richard H. Harte has resigned as attending surgeon. The vacancy on the staff will be filled by the Board on November 24.

Increased Help for Health Department.—Councils' committee on Health and Charities has recommended the creation of 18 new berths in the Health Department at salaries aggregating $12,000. The salary of Dr. Hawkes, physician in charge of the insane department of the Philadelphia Hospital, is asked to be made $1,500 instead of $1,000. New fire escapes, fire towers and stairways are to be added to this hospital. The sum of $10,000 is also recommended for the purchase of modern hospital beds.

College of Physicians.—At the meeting held November 2, the minority committee on sites presented their report on the location for the proposed new building of the college. This committee has from the start been dissatisfied with the lot already purchased at Twenty-second and Ludlow streets. After a long discussion of the report the following resolution was almost unanimously adopted: Resolved, that at the present time it is deemed inadvisable for this body to erect a building at the corner of Twenty-second and Ludlow streets. Three other possible sites were discussed. These are at Eighteenth above Spruce; Locust, east of Fifteenth Street, and the present site. A report on these sites will be made at the December meeting.

Special Lectures for County Medical Society.—In pursuance of the suggestion made last winter, the Philadelphia County Medical Society will inaugurate a course of special lectures on November 16. Dr. George McClellan will speak on "The Relations of Anatomy to the Needs of the General Practitioner of Medicine," and Dr. Albert P. Brubaker on "The Nervous Mechanism of the Heart-beat." The lectures are free to the profession though primarily intended for the benefit of the members of the society.

Dr. Cullen Addresses Society.—Dr. Thomas S. Cullen, of Baltimore, by invitation addressed the North Branch of the Philadelphia County Medical Society on November 10, taking as his subject "The Causes of Uterine Hemorrhage." The discussion was opened by Dr. Wilmer Krusen.

University of Pennsylvania Medical Society.—At the meeting of October 28, the following officers were elected: President, Dr. C. H. Frazier; Vice-Presidents, Drs. A. O. J. Kelly and H. D. Jump; Secretary, Dr. H. C. Wood, Jr. Five meetings a year are to be held, in November, January, February, March and April.

Artificial Anus in Typhoid Perforation.—At the Philadelphia Academy of Surgery, November 7, Dr. J. Chalmers DaCosta reported a case of typhoid perforation treated by making an artificial anus, this being the only recovery among the five cases of typhoid perforation he has operated upon. The perforated ulcer was two feet above the ileocecal valve and between these points were many ulcers on the verge of rupture. The condition of the patient was desperate and an anus was formed by Bodine's colostomy. The symptoms of typhoid promptly disappeared but ten days later violent pain in the right iliac region was followed by the escape of fecal matter along the outside of the proximal part of the bowel. This was probably due to a second perforation. The patient has now recovered from resection and lateral anastomosis to cure the artificial anus. Dr. DaCosta concludes that in exceptional, and only exceptional, cases of typhoid perforation, the formation of an artificial anus is advisable.

CHICAGO.

Chicago Men Win Medal.—A gold medal has been awarded to Dr. A. J. Ochsner and Meyer J. Sturm, architect, for hospital plans exhibited at St. Louis. The notification has been received from the president of the superior jury. The plans were entered under charities and corrections, Class 139, and consist of complete plans of four hospitals—a city hospital, a country hospital, a hospital for towns, and a hospital for the treatment of contagious diseases. The latter plan presents a radical departure from any existing hospital structures now in use, and it is upon the marked advantages of this building that much honor has been gained. There were fourteen drawings in all. Meyer J. Sturm is assisting architect in the construction of the new Augustana Hospital, and is making a specialty in the matter of hospital construction.

Donation for New Hospital.—The Presbyterian Board of Missions has received a donation from Mrs. Simon Reed, Lake Forest, of $7,000, to be used for the erection of a hospital at Oroomiah, Persia.

State Board of Health Awarded Medal.—A gold medal has been awarded the Illinois State Board of Health for its admirable exhibit in the section of hygiene at the Louisiana Purchase Exposition.

Stenosis of the Lower Portion of the Esophagus.—At a meeting of the Chicago Medical Society, held November 2, Dr. B. W. Sippy presented a man who, five or six weeks ago, began to have difficulty in swallowing. During the act of swallowing he feels great discomfort below the lower portion of the sternum. There is greater discomfort in swallowing liquids than solids. The onset of the trouble was rather sudden. Some days the difficulty in swallowing is greater than it is on other days, and on these days food is regurgitated without any effort at vomiting. The food does not taste sour, but it is practically regurgitated in the same condition as when it is swallowed. He said that when a patient presents himself with pain in the lower portion of the sternum upon eating, and when food regurgitates, or even before the symptom of regurgitation is present, one should suspect esophageal stenosis. There are many things that produce pain on eating, and among them he mentioned obstruction of the esophagus, ulcer of the cardiac end of the stomach, carcinoma of the cardiac end of the stomach, perigastric inflammation, either acute or chronic, perigastric adhesions, epigastric swelling, etc. Dr. Sippy introduced an esophageal bougie of large size and located the obstruction in the esophagus at about forty centimeters from the incisor teeth, the obstruction being near the cardia. A diagnosis of esophageal stenosis at its lower portion was made. After considering at length the differential diagnosis, he said it is advisable to place the esophagus as near at rest as possible. There should be as little irritation of it as possible by giving foods that are mushy in character, neither too hot nor too cold, which will pass readily without causing irritation. Mikulicz, he said, fed a patient through the gastrostomy wound for five years, and still the spasm continued. He subsequently cut down through the gastrostomy wound and forcibly stretched the cardiac orifice, producing a submucous rupture of the fibers, and the patient has had no trouble since. He has operated on three other cases since, with good results. Cases that are recognized early may be so managed that the process does not continue. Spasmodic esophageal stricture may continue for a period of a few months, then followed by spontaneous recovery. But once dilatation occurs, it is very improbable that a patient ever recovers, and

sooner or later there comes a time when there is so much spasm that the patient can no longer obtain a sufficient quantity of food for nourishment. Some cases go on to death in two or three years, while others live many years, but it is a serious condition after dilatation is once present. Dr. Sippy then passed the esophagoscope (having preceded it with thorough cocainization of the esophagus), so that the members could see the point of constriction through the instrument. He said in this case a bougie would be passed day by day; the patient would be given food that was non-irritating; also between thirty and forty grains of bromide of sodium every four hours, and the patient's body would be given as much rest as possible. With this line of treatment he hoped to succeed finally in overcoming the spasm, as there was no ulceration, no erosion, and no sacculation in this case.

Myasthenia Gravis.—Dr. Mortimer Frank read a paper on this subject, saying that it is a rare disease in childhood. Fifty per cent. of the cases have been in the female sex, and between the ages of twenty and thirty years. Only three cases have been reported under the age of ten years. The most important symptoms are ptosis, which was present in over 80 per cent. of all recorded cases; ophthalmoplegia externa, weakness of the muscles of the face, speech, arms and legs. Even more marked than the weakness was the rapid tiring of the muscles on use and upon stimulation by the faradic current. The phenomenon of rapid tiring is usually confined to a few muscles or a group of muscles. Prognosis as regards recovery is practically hopeless. Average duration of the disease from one to three years. Treatment of little benefit. Pathology vague and uncertain. As yet, no characteristic lesions either macroscopic or microscopic. The case reported was in a female child, ten years of age. Ptosis was first noticed in November, 1902. The present condition, bilateral ptosis and external ophthalmoplegia.

CANADA.

Montreal Health Department Annual Report.—The annual report of the Health Department of Montreal for 1903 has just been completed, and it shows that a better system of tabulating deaths and births in that city has been inaugurated. Taking the figure of the population of Montreal as given in the fourth census returns of Canada, completed at the end of April, 1901, by the Federal Government, namely: 267,730 inhabitants, and calculating the probable increase of the city's population up to the middle of the year 1903, the total mortality for the city for that period is 24.39 per 1,000. The mean anual death rate for the past eighteen years, leaving out that for 1885, the year in which the great smallpox epidemic occurred, was 24.77 per 1,000 of the population, while the rate for 1901 was 23.25, and that for 1902 22.58 per 1,000. The rate for 1903 was, therefore, 4.56 less than the mean rate for the preceding eighteen years; 3.04 per 1,000 and 2.37 per 1,000 less than in 1901 and in 1902, respectively. Tuberculosis caused less deaths than in the preeeding years. Before 1900 the number of deaths was 692; in 1901, 647; in 1902, 644; while in 1903 the number was only 633. In 1903 there were two deaths caused by smallpox, or eight less than in 1902; 77 by measles, or seven less than in the preceding year; 24 by scarlatina, or 40 less than in 1902, 21 less than in 1901, and 108 less than in 1900. The deaths from diphtheria and diarrhea cannot be compared, as they have been classified according to the new international system. Under the title "diphtheria" are included the deaths from croup, and under the title "diarrhea," the deaths from enteritis. Typhoid fever caused 90 deaths, or four more than in 1902; but 40 less than in 1901, and 30 less than in 1900. Bronchitis caused 224 deaths, or six more than in 1902. Pneumonia (including bronchopneumonia) caused 528 deaths, or 16 less than in 1902.

Marriage-rate and Birth-rate in Montreal.—It will be seen, according to the annual report of the medical health officer of Montreal, that the mean birth-rate of the 16 past years, without distinction as to nationality, was 39.10 per 1,000 of the population. The French-Canadian birth-rate was 49.95 per 1,000 of population; that of other Catholics, 25.95, and of Protestants, 24.96 per 1,000 for the past sixteen years. The total birth-rate for 1903 was 36.08 per 1,000. The rate for that year among French-Canadians was 43.64 per 1,000: other Catholics, 30.69; Protestants, 20.52. The excess of births over deaths was 3,375, distributed as follows: French-Canadians, 2,541; other Catholics, 337; Protestants, 507. The birth-rate in 1903 was 36.08 per 1,000, or 3.02 per 1,000 less than the average for the preceding sixteen years, and yet it is the highest rate since 1896. It is 0.43 higher per 1,000 than in 1902, and 3.54 per 1,000 higher than in 1901. The report gives the marriage rate for 1903 as 10.16 per 1,000 of the population, giving an increase of 1.18 over the mean rate for the preceding sixteen years, on an increase of 0.94 per 1,000 over the rate in 1902, and 2.01 over that for 1901. The marriage rate among the French-Canadians for 1903 was 10.75 per 1,000 of the population, or 0.79 per 1,000 more than the mean rate for the preceding fifteen years, or 1.04 per 1,000 more than in 1902, and 1.28 per 1,000 more than in 1901. Among other Catholics the rate for 1903 was 7.35 per 1,000, or 1.29 per 1,000 more than the mean rate for the preceding fifteen years, or 0.06 and 1.50 per 1,000 more than in 1902 and 1901, respectively. Among Protestants the marriage rate in 1903 was 10.36 per 1,000, or 1.39 per 1,000 more than the mean rate for the preceding fifteen years, or 1.21 per 1,000 more than in 1902, or 32 more than in 1901.

A New General Hospital for Toronto.—Two of the leading members of the Senate of Toronto University waited upon the Premier and other members of the Ontario Government a few days ago and were successful in obtaining the promise that the Government would contribute $100,000 in the scheme for erecting a new general hospital for Toronto. The Government will provide this sum on the condition that the question of sites, it being understood that it would be donated for the purpose of helping the university in the matter of clinical teaching. It is a question whether the out-patient and emergency hospitals should be located where the other buildings are erected, and in view of the fact that for the former Mr. Cawthra Mulock has already donated $100,000 and another $100,000 has been bequeathed for the emergency branch, it would seem that there may be three buildings to be hereafter called the Toronto General Hospital collectively. It was also a condition of the Government's promise to contribute $100,000 that the City of Toronto would contribute a like sum. These amounts would form a handsome sum with which to commence operations for a very complete and up-to-date hospital. The new hospital, when completed, will form one of the finest in Canada, or on the American continent, and will furnish most complete and satisfactory equipment for the prosecution of clinical teaching in connection with the medical faculty of the provincial university.

Nova Scotia Branch of the British Medical Association.—The annual meeting of the Nova Scotia

Branch of the British Medical Association was held in the city of Halifax, October 5, the election of officers resulting as follows: President, Dr. C. D. Murray; vice-president, Dr. W. H. Hattie; treasurer, Dr. G. M. Campbell; secretary, Dr. E. D. Farrell. Council, Drs. Goodwin, Hattie, Hare, Mader, G. M. Campbell, Mathers and Ross.

A Visitor from Dawson.—Dr. J. N. E. Brown, Secretary of the Gold Territory, Dawson, is spending a six months' leave of absence in Toronto, Ontario, and other points in Canada. Dr. Brown was formerly a practicing physician in Toronto and secretary of the Ontario Medical Association.

Toronto University Senate Elections.—The graduates in medicine of Toronto University have elected the following representatives to the Senate of the University, all of the four gentlemen elected being members of the Medical Faculty thereof: Dr. George A. Bingham, Professor Adam H. Wright, Professor Irving H. Cameron and Professor J. Algernon Temple.

Experts to Examine Montreal's Water.—On account of numerous complaints which have been made for years against the condition of Montreal's water supply, the City Council has appointed a commission of experts to make an exhaustive examination of same. The commission will consist of Dr. R. Ruttna, Professor of Chemistry, McGill University; Dr. A. Bernier, Professor of Bacteriology, Laval University; Dr. J. E. Laberge, chemist, bacteriologist and director of the Montreal Civic Hospital, and Mr. Milton Hersey, chemist and city analyst.

Personals.—Dr. Fred. Harvey has succeeded Dr. Tait McKenzie as director of the McGill gymnasium, the latter having gone to Philadelphia to assume his duties as director of the physical department of the University of Pennsylvania.

The Hon. Dr. M. Sullivan, Professor of Surgery in Queen's Medical College, Kingston, Ontario, has just completed his fiftieth year as a disciple of Æsculapius. Dr. Sullivan started the study of medicine at Queen's in 1854, and is still in harness.

GENERAL.

Alien Asylum Inmates.—A report from the local United States immigration inspectors has been forwarded to Frank P. Sargent, commissioner of immigration, on certain frauds perpetrated by aliens. The Administration has discovered that in nearly every State in the Union a large percentage of the inmates of asylums for orphans and aliens are persons who have been sent to this country especially for the purpose of being placed in such institutions, where the treatment is better than the care given in European institutions. The report deals with institutions in this district. The facts will be presented to Congress. Those who have carefully studied the paper of W. A. White, Superintendent of the Government Hospital for the Insane, can draw the same conclusion from his figures.

Harvard Buildings.—The new Harvard Medical School buildings now in course of construction are so far advanced that a good idea can be obtained as to what the general appearance of the completed group will be. They are situated on Longwood Avenue, Brookline, at one border of the Parkway system surrounding Boston, and are about fifteen minutes' ride on electrics from the present medical school back of the Public Library. The plan is that of a large court, 75-100 yards square, one open and facing on the street, two sides occupied by school buildings proper, and at the head of the court on a raised terrace the administration building. White marble is used throughout, the architecture is simple, and the whole effect when completed will be very beautiful. On the right, facing the court are two buildings for hygiene and pharmacology in one, physiology and physiological chemistry in the other, on the opposite side stand the surgery, bacteriology and pathology building, and next to it one for anatomy, histology and embryology. Work was begun last November, but was considerably delayed by the severe winter. They will doubtless be completed by next summer, and entered the fall of 1905. At present the exterior of all the structures, except that of the administration building, is finished; of the latter, the foundation and part of the framework is completed. Hundreds of men are engaged and work is progressing rapidly. It is the object of the school to have affiliated hospitals near by, and already several institutions at present in the city and anxious to get into new quarters have availed themselves of offers of building sites, on the large tract of land belonging to the University. Work on the new Samaritan Hospital is nearly completed, and preliminary plans have been made for the new Children's Hospital and the Thomas Morgan Rotch Infants' Hospital. Near by, but further in town, is Simmons College, where nurses in some of the hospital training schools of Boston are, or soon will be, taking courses as part of their regular work. Close to this is the new Tufts College building. Further out in Brookline is the Brookline Women's Hospital and the Baptist Hospital, so a nucleus of a large medical center is here rapidly being formed.

Health Drifters.—Under the title of "The Health-Drifters of the Great Southwest," Frank D. Witherbee writes in the current issues of *Charities*, New York, of the great migration of tuberculosis patients to the Salt River Valley of Arizona, and of the life they lead in tents and shacks in and about Phœnix. Out of a winter population of some 15,000, fully 5,000 are health seekers, drawn to Arizona by the dry climate and constant succession of sunny days which are essential for their relief and cure. Fully 90 per cent. of the days in Phœnix are clear and bright, and the relative humidity of the atmosphere is far below that of the average. "On the one hand these conditions lead to a remarkable percentage of recoveries," writes Mr. Witherbee; "but on the other there is an amount of social and spiritual suffering which is not generally understood. As a matter of fact, a great majority of people go too late to be helped by any power on earth. A Phœnix physician has said that fully four-fifths of the visitors are incurable. The streets are filled with them—thin and wretched, homesick and suffering. Heedless physicians and relatives send patients to Phœnix alone and with scant means of support. The blundering argument is made that all the sick one needs is to get to that country and his condition will permit of his doing light work which he can easily find. But the facts are that this incapacitated one is going to a country swarming with people looking for like chances; that it is essentially a ranching community, where the bulk of the workers to be of any service must be able to plow and sow and reap and herd cattle, often standing in water all night long to irrigate. What few chances there are for light work ought not to be accepted because they are too confining. Here, as wherever consumptives have taken up work in desirable climates, they have by their underbidding and their numbers steadily forced wages down to a point where they can scarcely earn enough to live. Many of the necessities of life by reason of high freight rates are much more costly than in other communities. Out on the desert, at the outskirts of the irrigated parts of the valley, and extending to

the foothills, there are tents of all sizes and description. Some are in groups and others stand alone, some are roomy and attractive, others are cramped and desolate looking. Some of the ranchers near Phœnix have made a specialty of providing accommodations for health seekers, and offer furnished tents or rooms in specially constructed houses with board at the ranch house. The local fraternal lodges, the churches, the county almshouse and the one free sanatorium, are crowded to their utmost capacity year in and year out. Many a patient reaches Phœnix with his small capital exhausted by traveling expenses and finds himself dependent upon the resources of a community which has no interest in him and where he finds on many sides an almost hardened indifference to his pitiable need. This is not because residents of Phœnix are lacking in the finer feelings which prompt to charitable service, but because the people of the East and Middle West are, by their lack of forethought, putting upon them a burden which in no sense belongs to them. The supervisors say that he poor in the almshouse cost the county $20,000 a year, and three-quarters of this is spent in the care of ailing consumptives."

Scientific Disposition of Sewage.—In an article in the *Scientific American*, Charles F. Holden tells of the scientific disposition of sewage in the city of Pasadena, Cal. He says: "The sewage plant, consisting of about fifty miles of pipe, has 650 manholes, 140 flush tanks, and all the modern features which go to make up a perfect system, all of which cost the city in the neighborhood of $313,457. The sewer farm is, roughly speaking, about five miles and a half rom Pasadena, and the outfall pipe is about that length, twenty-two inches in diameter and of vitrified clay. It was placed five feet beneath the surface, having a fall of thirty-one and two-thirds feet per mile. There were several features here not found in the East, where rains flush the sewers continually. There was no rain from May to November, hence rain or a natural flow of water could not be depended upon; yet no serious difficulty has been experienced, the natural flow of the waste water being all-sufficient for the purpose. The farm is in the hands of a practical farmer, who runs it on scientific principles, and for nearly a decade it has been a yearly value-increasing asset of the city. The secret of the success of the Pasadena farm method lies in the application of the sewage. Before planting time a horse and plough form several enclosures on the surface to be planted, after the fashion of the long furrow seen in orange irrigation, the idea being to hold the sewage in a location until the fluid permeates the earth thoroughly and completely as would a good rain, that is, to a depth of three or four feet. This accomplished, it is allowed to dry sufficiently for working, when a cultivator is put on, and the ground from twelve to fourteen inches, the deeper the better, thoroughly cultivated and turned over. This is found in the soil at the Pasadena Sewer Farm to not only prepare the ground for the reception of seeds, but to render it perfectly 'sweet,' so there is no disagreeable odor, the hot sun acting as a deodorizer. So thorough is the work of nature after this simple treatment, that the farm managers state that there has never been a case of illness that could be traceable to the sewage or as a result of working in it. A criticism of such irrigation has been made that certain fruits and grasses may carry the impurities, but this is obviated here by an exact system. Thus so complete is the original irrigation that a later application is not necessary, as in the case of pumpkins or squashes."

To Study Epilepsy.—The fourth annual meeting of The National Association for the Study of Epilepsy, etc., will be held in the Medical Library, "The Fenway," Boston, on November 22 next. The Association invites all persons interested in the welfare of epileptics and in charity work generally, to attend this meeting. Among the papers to be read are the following: Presidential Address, by William N. Bullard, M.D., of Boston; The State's Relation to the Epileptic, by Owen Copp, M.D., Executive Officer of the Massachusetts Board of Insanity, Boston; The Prognosis of Epilepsy, by William Aldren Turner, M.D., of London, England; The Influence of Puberty and Adolescence in the Etiology of Epilepsy, by William P. Spratling, M.D., of Sonyea, N. Y.; Certain Aspects of the Differential Diagnosis Between Hysteria and Epilepsy, by Drs. Putnam and Waterman, of Boston; Some Observations on the Treatment of Epilepsy, by Daniel M. Brower, M.D., of Chicago, Ill.; Spectrum Analysis of the Blood in Epilepsy, by J. W. Wherry, M.D., of Clarinda, Iowa; Syphilitic Epilepsy, by Abner Post, M.D., of Boston; (*a*) Observations on Blood Pressure in the Epileptic; (*b*) Lantern Slide Illustrations of Cases, and of the Massachusetts Hospital for Epileptics, by Everett Flood, of Palmer, Mass; Ten Cases on Special Treatment, by Drs. Morton and Green, of Palmer, Mass.; Lumbar Puncture in Status Epilepticus, by Dr. Morton; Senile Epilepsy, by G. Kirby Collier, M.D., of Sonyea, N. Y.

The objects of the Association are: (1) To promote the general welfare of sufferers from epilepsy. (2)To stimulate the study of the causes and the methods of cure of this disease. (3) To advocate the care of epileptics in institutions where they may (*a*) receive a common school education; (*b*) acquire trades; (*c*) be treated by the best medical skill for their malady. (4) To assist the various States in America in making proper provisions for epileptics.

The officers of the Association are: Dr. Wm. N. Bullard, of Boston, President; Wm. P. Letchworth, LL.D., of Portage, N. Y., Vice-President; Prof. Wm. Osler, M.D., of Baltimore, Second Vice-President; Dr. Wm. P. Spratling, of Sonyea, N. Y., Secretary and Treasurer.

CORRESPONDENCE.

OUR LONDON LETTER.

(From our Special Correspondent.)

LONDON, October 29.

ANTITYPHOID INOCULATION—THE PREPARATION OF DIPHTHERIA ANTITOXIN.

SOME eight years ago it was announced that Dr. A. E. Wright, at that time Professor of Pathology in the Army Medical School at Netley, announced that he had succeeded in preparing a serum, the inoculation of which produced immunity in regard to typhoid fever. He first tested it on himself and on some of the medical officers on probation studying at Netley, and later on the nurses and attendants in a large lunatic asylum near Maidstone, at a time when that town was suffering from a severe visitation of enteric fever. Dr. Wright next extended his experiments to troops going to India, where the disease caused a high rate of mortality among young soldiers. The use of the serum was at first sanctioned by the Indian Government, but later the performance of inoculations in India was forbidden by an Army order. Wright was a member of the Commission sent out to investigate the plague in 1898, and

while he was in India he took the opportunity of inoculating some four thousand soldiers in defiance of the order. The results were said to be so good that on the representations of the Principal Medical Officer with the Government of India, official sanction was given to the use of the serum. During the war in South Africa about 100,000 men were inoculated. After the war the medical service of the Army was reorganized, a principal reform being the formation of an Advisory Board composed partly of eminent civilian physicians and surgeons to assist the Secretary of State for War on medical questions. One of the early recommendations of that Board was that the antityphoid inoculation should be discontinued. Dr. Wright appealed against this decision, and the question was referred to the Royal College of Physicians, which appointed a special Committee to investigate the subject. The Committee reported that "after careful scrutiny of the statistics from both official and private sources which have been made available, we are of opinion that not only is a lessened susceptibility to the disease brought about as a result of the inoculations, but the case mortality is largely reduced." The Committee went on to say: "We are further of opinion that with due care the process of inoculation is devoid of direct danger, but that under special circumstances there may possibly be some temporary increase of susceptibility to infection immediately following inoculation; and it is, therefore, desirable that the preparation of the vaccine and the inoculations should be carried out under specially skilled supervision." This report, however, failed to convince the Advisory Board that its decision against the inoculations had been mistaken. Dr. Wright, on his part, persisted in his efforts to vindicate the reputation of his serum, and a few months ago another Committee of Inquiry was appoined by the War Office. The members of that committee were Dr. C. J. Martin, Director of the Lister Institute of Preventive Medicine; Dr. A. Macfadyean of the same Institute; Dr. Caiger, an acknowledged authority on fevers; Dr. Bruce Low, an Inspector of the Local Government Board; Dr. Bulloch, bacteriologist to the London Hospital; Colonel David Bruce, of the Royal Army Medical Corps, whose name is associated with researches on Malta Fever and Sleeping Sickness; Dr. Galloway, physician to Charing Cross Hospital; Dr. Wright himself and Major Leishman, his successor in the Chair of Pathology at Netley. Colonel Bruce and Dr. Galloway are members of the Advisory Board above referred to, and the former is said to have been an active opponent of the inoculations. This committee reported that "the antityphoid inoculation had resulted in a substantial diminution in the incidence and case mortality from typhoid fever, and recommended that the system introduced by Professor Wright should be resumed in the Army." This recommendation has been adopted by the Army Council, and a commencement is about to be made by inoculating volunteers from a regiment under orders for India. Wright, therefore, would seem to have triumphed over his enemies. Nevertheless, he is not satisfied, and he and his *fidus Achates*, Bulloch, have shaken the dust of the committee-room off their feet, because the carrying out of the inoculations has been entrusted to Major Leishman, who will be assisted by medical officers of the Army. The reason given is that the process is not yet perfect, and its further improvement require the labor of years, and the work can be done properly only by a permanent committee consisting of civilian experts and army medical officers. Which, being interpreted, means that Wright thinks that the task should have been entrusted to himself. It is only natural that he should think so, as the invention is his and he has so far worked without reward or recognition of any kind from the Government. It may, however, be said of him, as Carlyle's mother said of that prophet of pessimism, that he is "gey ill to deal wi'." He attributes the transference of the management of the inoculations to Leishman to the malign influence of Bruce. This may very well be true, but it is not the whole truth. Moreover, Wright is scarcely entitled to sympathy as a victim of personal hostility, as in his capacity of member of the Indian Commission on Plague, he took an attitude of such opposition to Haffkine, the inventor of a protective serum against cholera, that in the eyes of many the conclusions of the Commission were so vitiated thereby as to be of no real value. He has appealed to the press, and the *Times* of October 27, in an evidently inspired article, has put his case before the public in such a way as to give the impression that he is a martyr of science. This no one who knows him will be disposed to believe. It is quite true that he appears to have been badly treated, but he has a talent for making enemies. Those who know to what an extent such personal jealousies warp the judgments of men whose sole object is supposed to be the discovery of truth may be pardoned if they hold the decisions of scientific commissions just as liable to error as theological councils, and as much subject to the disturbing influence of human passion as political parties.

The Royal Colleges of Physicians and Surgeons have decided to give up the preparation of antidiphtheria serum. The work is, however, to be taken up by the Metropolitan Asylums Board for one year as an experiment. It will be carried on in the same laboratories and with the help of the same scientific staff as heretofore. The Colleges have for some years past issued from 20,000 to 30,000 doses of antitoxin of 3,000 units each, most of which has been used in the hospitals of the Metropolitan Asylums Board. In 1894 the Colleges undertook the bacteriological examination of diphtheria cases in these hospitals. The object was that the treatment might be tested on a large scale. At that time the serum was regarded with considerable doubt not only by the public but by not a few members of the medical profession, and it was believed that if the serum were prepared with the sanction of the Royal Colleges more confidence would be felt in the remedy. The Colleges have no profit out of the work, and their abandonment of it may be taken as evidence that the purpose which they had in view has been fulfilled. Henceforward the serum will not have the guarantee of the Colleges, and the Metropolitan Asylums Board is not in a position to supply anything of the kind in its place. Moreover, if the Board decides to discontinue the manufacture at the end of the year of trial, what is to happen? The preparation of the serum will be left to private enterprise, and as such will be open to the suspicion of commercialism from which it has hitherto been free in this country.

Mme. Curie. The co-discover with her husband is a comparatively young woman. She was born in Warsaw in 1868. Her father, being an excellent naturalist, encouraged her taste for mathematics and she obtained her degree in that branch at Paris in 1891. Here she met Professor Curie and they were married. Together they have enriched the subjects of physics and chemistry to a remarkable degree.

SOCIETY PROCEEDINGS.

SOCIETY OF THE ALUMNI OF CITY HOSPITAL.

116th Stated Meeting, held October 12, 1904.

Malignant Growth of the Penis.—Dr. Reynolds presented two cases which exhibited a probable malignant growth of the penis. He showed a very graphic oil painting of one of the lesions. In both cases the patients were just over forty years of age, and in each the organ was satisfactorily removed.

Operation for Hemorrhoids.—Dr. Lyle reported a case in which after a simple routine operation for hemorrhoids there had been persistent failures to heal. Four months after the operation Dr. James Tuttle was called in consultation. He said at once that he had recently seen three or four similar cases and before he had examined the patient, he stated that it was probably tuberculous or syphilitic. Pathological report showed it to be the latter.

Appendectomy.—Dr. Lyle reported a case of appendectomy in a woman sixty-five years of age. In less than twenty-four hours after the advent of the first symptom, the abdominal cavity was found full of pus. The symptoms were of an insidious character. The point he emphasized about this case was that through drainage was established through Douglas's sac. A gauze drain passing continuously from the abdominal wound through the vagina. It was in situ for three days and was then removed from below. He considers vaginal drainage of very great importance.

Difficulties in Anesthetization and Their Correction.—Dr. Victor C. Pedersen read this paper. The text of this paper will be found in a subsequent issue of the MEDICAL NEWS.

Dr. J. T. Gwathmey, in opening the discussion on Dr. Pedersen's paper, said that among the many minor points in connection with anesthesia, none seemed to him more important than the fact that in the first and second stages of nitrous oxide anesthesia, the patient can hear and appreciate many of his surroundings. Since the mental condition has unquestionably much to do with the physical post-operative well-being, great care should be taken during these two periods that nothing is said or done to alarm the patient. Another minor consideration is to be found in executing the change from the gas to the ether. As is well known, rigidity often manifests itself at this period, and here perhaps more than anywhere else in the course of the anesthesia, rigidity means deficiency of air. He agreed with Dr. Pedersen that a tracheotomy set should always be a part of the anesthetist's outfit.

As for chloroform as an anesthetic for tonsil and adenoid operations, he would, if left to himself, invariably choose ether, the acceleration of respiration from this admirable stimulant being highly advantageous. He felt that less hesitation should be shown in changing a refractory patient from chloroform to ether or vice versa, than many anesthetists were wont to show. Attention to the purely respiratory conditions of the patient often sufficed to keep the anesthetist busy, and a nurse should be employed to watch the pulse. He invariably gives a bagful of gas with or without oxygen for the last fifteen minutes of an operation, believing, not only that the patient thereby receives less ether, but is enabled to come out of the anesthetic very much more rapidly than is otherwise the case. For vomiting he has found that a substitution of the ether-soaked towels for bowels saturated with cologne, amyl nitrite and spirits of ammonia is often highly efficacious. He closed by saying that he believed that the utmost care should be taken in removing patients from the operating room to their beds.

Dr. Nathan W. Green said, that it was an undoubted fact that, just as in local anesthesia, a patient likes to grasp something very tight in the hands, so in major anesthesia ability to grasp some object is comforting and quieting to the patient. He therefore always reassures and quiets him by having him hold the hands of an attendant very tightly. He further believes that advising the patient that he will, when the mask is put over his face, get nothing but abundance of pure fresh air, is distinctly advantageous. The gas can then be turned on by a quick and noiseless movement almost without the patient's knowing it. Gas anesthesia should not be carried too far, since it predisposes to vomiting in the early stages of ether anesthesia. He believes that a suture through the tongue to hold it in the rare cases in which it cannot otherwise be supported is better than any form of tongue forceps. It is a mistake, in the opinion of the speaker, always to crowd the ether, if a patient is vomiting, for as already suggested such vomiting may be due to other causes, one of which is too profound gas anesthetization. He called the attention of the society to the well-known experiment upon the reptilian heart in which the organ is poisoned by muscarine until it stops beating and is then brought back to normal activity by having a few drops of an atropine solution poured upon it. This should be remembered as indicating the value of atropine in threatened death from circulatory stagnation during anesthesia. Dr. Green believes it to be of very great convenience to have the gas remain connected with the anesthetic apparatus throughout the operation. In his opinion it should not be disconnected at all, but should remain on tap at any moment, for it is the most ready and convenient way to overcome the very inconvenient returns to semi-consciousness, which are by no means uncommon when patients are being kept very lightly under the anesthetic. He is a thorough advocate of the closed method, but as some surgeons insist upon the use of open methods and inasmuch as this seems to work better in a very few cases of alcoholic patients, it is well to have an old-fashioned towel cone at hand.

Dr. Wiesner spoke of the old days of anesthesia and how completely the ancient methods have gone out of use. He expressed his thanks and that of the Society to the experts who had spoken so interestingly on this important subject.

Dr. Waterman believed that the anesthetist in these days of specialization must know more than the operating surgeon about the anesthetic and should be given his choice of what to use.

Dr. Terriberry took issue with this view on the ground that the anesthetist, as an entire stranger and ignorant of the pathological conditions, could not possibly be as good a judge of the type of anesthetic indicated as the operator. It seemed to him that a consultation between the two would give better results.

Dr. Hough spoke of the importance of counting, especially in children. It is a most serviceable way to divert their attention and to save them from panic. He said that atropine should be used judiciously, especially in elderly people, for several cases of glaucoma had resulted from the use of it.

Dr. Pedersen, in closing, said there never was any question in his mind as to the correctness of the belief that when most patients stiffened out, they needed an abundant and free supply of air. He believed that a failure on the part of the operators while removing adenoids and tonsils, to put the patient into Rose's position was responsible for immediate and remote complications much more definitely than the use of chloroform in place of ether. In giving chloroform he considers it essential to administer it drop by drop rather than as is commonly done by intermittent floodings. He agreed with Dr. Green that the patient should be told that a period of suffocation will probably come. If they are prepared for this, they will not mind it. Masseteric rigidity can be conveniently handled by placing a pair of rubber-covered forceps back of the jaw and opening the mouth. This gives the anesthetist both hands free. He disagreed with Dr. Green, however, very vehemently as to the possible indications for the use of the old-fashioned cone. He believes that none exists. As usually made, this cone is a stumpy affair more than half filled with cotton and towels for the reception of the ether. If under any conditions such a shape of cone should be used, it ought to be made at least a foot high so that there shall be an air space of 500 c.c. This represents the average tidal air and is necessary both for safety and for comfort. Dr. Pedersen cited a case which seemed to him to offer positive proof that anybody could be put out with the metal cone without a struggle.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held October 17, 1904.

Dr. Joseph C. Bloodgood was elected president and Dr. C. H. Bunting secretary for the ensuing year.

Plastic Operation on the Face.—Dr. Stephen Watts exhibited a patient on whom a plastic operation had been done for a wound of the lower lip and chin. The boy, fifteen years old, had been bitten by a circus-pony, and the soft parts, from the mouth down, removed, including the periosteum. The wound was a clean one. A flap was dissected from the upper arm, its under-surface and the raw area left by it being covered by a graft taken from the thigh. After sufficient time had elapsed for the establishment of circulation in the flap it was sutured to the face wound, its pedicle being still left attached to the arm, which was bound up to the chin by a plaster dressing. At the end of three weeks the flap was gradually separated from the arm, the operation being done in several sittings. Photographs of the patient before, during and after the treatment were exhibted, showing the change from a terrible deformity to a fairly normal appearance.

Metastatic-melanosarcoma and Adenocarcinoma of the Umbilicus.—Dr. Cullen reported three gynecological cases: The first, a woman of fifty-eight years, complained of abdominal enlargement, pigmentation and loss of weight, for which no cause could be discovered. There was a small mole on the neck. The abdomen was opened and an umbilicated new growth of the liver and omentum found, which proved to be a melanosarcoma with areas of pigmentation. Metastasis from the mole in the neck seemed probable. The second case, a woman of forty-two years, had been struck on the abdomen, and after three weeks had begun to have a discharge from the umbilicus, around which there was a collar of induration. The inguinal glands became enlarged. The involved area about the umbilicus was excised, and the omentum and glands of the groin removed. The tissue proved to be adenocarcinomatous, and the probable primary site was the umbilicus. The third case was one of a patient who had had a carcinomatous kidney removed one year ago. After seventeen months of health a tumor was noticed developing in the right side, which rapidly increased in size, caused loss of weight, and was accompanied, on admission, by a temperature of 102.5° F. On opening the abdomen the tumor was seen bulging under the liver. It was removed with a knife, after clamping the cystic duct, a suture being placed with a dull needle as the cut was made. The tumor proved to be a metastasis from the carcinomatous kidney. The patient convalesced without event and was discharged four and one-half weeks after operation. Macroscopically there was apparently little liver destruction. Round, blunt, knife-blade needles were used in this case, following the suggestion of an assistant of Mikulicz, who showed that with proper needles the liver could be sutured almost with impunity, all vessels being pushed aside and no bleeding occurring from the stitch hole.

Dr. Futcher, in the discussion, referred to Dr. Keen's paper on the importance of pigmented moles, and reported a case of a colored man with a mole on the right scapula whose axillary glands showed melanotic sarcoma.

Recurring Phlebitis of Obscure Origin.—Dr. Briggs, of Washington, D. C., read a paper on Spontaneous Phlebitis. A review of the literature and a consideration of his own cases, led him to the conclusion that there exists a definite group of phlebitis cases characterized by the absence of any inflammatory cause, by a progressive and relapsing course, by frequent occurrence in the veins of the extremities, the clinical similarity to gouty phlebitis but by the absence of symptoms of the lithemic diathesis. The case reported first was said to be characteristic of the group, and the symptoms were given in detail. The patient was a man, aged twenty-two years, and in splendid health. The family history was negative for gout. The patient had had typhoid and pneumonia, but had never done any particularly hard work. In May, 1901, he suddenly awoke with stiffness of the left ankle, followed, in a day or so, by tenderness over the internal malleolus. The internal saphenous vein could then be felt as a cord, and redness and edema, with some lameness, appeared. The acute symptoms subsided in two weeks, a palpable cord being left at the site of the original trouble. In July there was a second attack quite similar to the first, except that it involved the vein higher up. The onset was sudden and without cause, there were redness, tenderness, swelling and pain, and at the end of two weeks the acute symptoms completely subsided, leaving a palpable cord behind. General health remained good, and there was no leucocytosis. In September, October and December similar attacks occurred, the involvement being gradually higher until Poupart's ligament was reached. The onset was always at night, and there was never any warning. Disability was great, edema never marked, and the hemoglobin constantly high. No treatment was used, except cold applications, and the possibilities of embolism were completely disregarded. At present there is a palpable cord reaching to the middle of

the thigh. No edema is present, but there is occasionally a sense of fatigue. About 350 cases of spontaneous thrombosis are reported in the literature, but all of these are probably due to fevers, anemia or cachexia. Tuckwell and Paget, indeed, make the statement that every so-called spontaneous phlebitis is really gouty, a venous thrombosis being, for these authors, as pathognomonic as a tophus and phlebitis being considered not infrequently the sole manifestation of uricacidemia. Dr. Briggs, however, thought that his own case and at least five others in the literature must be considered as a separate group, the absence of any signs of gouty diathesis, the relapsing and progressive course, the obscure etiology and the absence of fever, anemia and cachexia as the cause being the symptom-complex common to all of them. No study of the pathology has ever been made, and any explanation must therefore be based on purely theoretical grounds. It is possible that the first change is in the formation of a sclerosis in the venous wall, and that the patients exhibit an anatomical, rather than a clinical, diathesis. The mortality is probably not high. Rational treatment would seem to be ligation of the saphenous vein above the process in order to prevent the formation of embolus. By the progressive nature of the disease the vein is doomed so that ligation would only accomplish what the malady itself would lead to later.

Coronary Embolism.—Dr. MacCallum showed several pathological specimens. The first was the heart of a man who had died suddenly after a very long illness with endocarditis. The absence of sweats and a relatively low temperature being the features of the case. The right auricle was found free at autopsy, but there were several vegetations on the tricuspid valve. The left auricle was covered with mural vegetations, the chordæ tendineæ were broken, and there were vegetations at the points of closure of the aortic valve. In the left coronary artery there was a corn-like plug similar to the vegetations in the heart. It lay loose in the vessel, there was no propagation of the clot and the vessel wall was intact. These features, together with the sudden death of the patient, seemed to indicate that an embolism had occurred. This condition is indeed rare, and Marie denies it entirely. Welch, however, holds such a position too radical. The cause of the sudden stoppage of the heart after occlusions of the coronaries is not entirely understood.

Polypi in the Intestine.—The intestines were shown of a man who had died after a long illness with dysentery. An abscess had formed in the left iliac fossa connecting with the bowel, and a vesicorectal fistula had later occurred. Cystoscopic examination had shown what was apparently carcinoma of the bladder. This proved at autopsy to be diffuse papilloma, and throughout the intestine were found little tags of polypoid growth which looked like the remaining bridges left by destruction of the intervening mucosa. The appearance suggested that such may be the origin of certain intestinal polyps. Dr. Cole said that he had seen several patients who gave a history of long dysentery, and who showed on proctoscopic examination, many polypi in the bowel. They had been diagnosed "polypoid colitis," but it was thought possible, in the light of Dr. MacCallum's case, that the papillomata might have been secondary and not causative.

Malignant Endocarditis.—Dr. Thayer showed the heart from a patient who had died with malignant endocarditis. He had had a mitral insufficiency for many years, but had kept busily at work with a systolic murmur audible with the ear a slight distance from the chest. Compensation was then fair, and there were no signs of aortic disease. In April, 1904, the patient was much overworked, and began to show a slight steady fever without other symptoms. Fresh endocarditis was suspected. A soft aortic systolic murmur soon appeared, and the heart began to enlarge; and the patient subsequently died, as the specimen showed, with acute aortic disease. Whenever an old heart case begins to show a slight steady fever the prognosis is bad.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held October 13, 1904.

The President, Roland G. Curtin, M.D., in the Chair.

Case of Subphrenic Abscess; With Illustrative Skiagraphs.—Dr. George E. Pfahler in the report of this case referred to the difficulty in diagnosis of subphrenic abscess, and pointed out the duty of using every known method of investigation. The principal object of the report was to call attention to the aid furnished by careful X-ray examination. The patient gave a vague history of an attack of appendicitis beginning ten days before admission to the hospital. On admission he had some fever (101° F.); pulse, 108; respiration, 32. There was slight tenderness in the right iliac region, with increased dulness in the right lumbar region, and an immovable area of dulness above the liver. He had a leucocytosis of 32,200. A diagnosis of subphrenic abscess was given and a confirmatory X-ray examination was made. This showed the right side of the diaphragm displaced upward. It was immobile, and there was a rise in the outer portion of its curve. The lung was clear above. The patient was operated upon, and one and one-half pints of pus were removed. A careful consideration of these points Dr. Pfahler believed would show the valuable additional information given by the X-ray.

Dr. John B. Shober emphasized the value of the X-ray as a confirmatory method in diagnosis, and as an adjuvant in therapeutic work in combination with other methods of treatment.

Dr. William L. Rodman felt that Dr. Pfahler had placed the profession under obligations to him in bringing to their aid another means of distinct value in the diagnosis of subphrenic abscess. A point of special interest, he thought, was the history of appendicitis, inasmuch as subphrenic abscess is generally supposed to be the result of gastric ulcer. The fact that the line of dulness is irregular in outline, Dr. Rodman felt, enables one to differentiate between subphrenic abscess and empyema, which is apt to be the most confusing condition.

The Therapeutic Use of X-ray.—Dr. S. Mason McCollin referred to the diagnostic aid of the X-ray and to the difference in opinion regarding the results obtained by its use. Cases were cited; one had suffered with epithelioma of the lips, so extensive that several surgeons declined to operate on it. Dr. McCollin had commenced the use of the X-ray on it about the middle of July, with daily treatments for the first two weeks; since then every third day. At present the lips are healed, and there is only one large gland under the jaw, which is not more than half its original size. This patient was exhibited to the

Society. One case of malignant growth of the breast, which had been twice operated upon, with an ulcerated surface of 6 x 8 inches, was relieved of all pain, skin formed over the ulcer and life was prolonged nearly one year. A case of non-malignant warty and painful tumors on the sole of the foot was entirely cured by a few applications of the X-ray. Dr. McCollin has also found the X-ray valuable in the absorption of enlarged tuberculous glands. The glands should be removed by the knife and the X-ray treatment instituted. Especial attention was directed to the advisability of applying the X-ray after all surgical operations for malignant growths.

Value of Radium.—Dr. John L. Shober spoke upon the value of radium as a therapeutic agent and cited a number of instances in which he had employed it with distinct benefit.

Treatment of Malignant Disease.—Dr. Charles Lester Leonard made a plea that the X-ray might have more chance in treatment. He regarded Dr. McCollin's case as a beautiful demonstration of the possibilities of this treatment. The present difficulty is, he said, that the X-ray is being asked to cure practically dead patients. What is wanted is the cooperation of the medical men and the surgeons in the use of an agent which has been shown to have such power. The best means known for the treatment of malignancy, Dr. Leonard stated, is early radical operation, and if to early radical treatment there is added the supplementary treatment by the Roentgen ray, there is a combination of the two methods which scientific medicine has shown most effective in treating this scourge of the human race. He particularly emphasized the fact that it is the duty of the physician to have malignant disease operated on as early as possible, if operation is possible, and to supplement that operation by the Roentgen treatment.

Dr. George E. Pfahler spoke of four cases of mediastinal growth at present under his treatment, one referred to him five months ago by Dr. Charles P. Noble, after the removal of a mass in the axilla. To-day the patient, to all appearances, is in perfect health. The other three cases were of too recent record to speak of the result. Two cases of inoperable carcinoma of the uterus have apparently recovered. Improvement had also been noted in another case of carcinoma of the uterus with involvement of the rectum.

Dr. John B. Roberts asked the opinion of the X-ray men of the difference between the action of the X-ray and radium upon sarcoma and carcinoma, whether it be scirrhus or epithelioma, and whether they had arrived at any distinct "dosage."

Dr. W. S. Newcomet said he believed that the X-ray more readily affected the chronic, if such term might be used, form of malignant growths. The question, he thought, was not so much one of dosage, but of a selection of cases.

Dr. Leonard, in answer to Dr. Roberts, said that a dosage in X-ray is practically the same as the dosage in any drug or other remedy; it depends upon the individual and the case. The treatment for epithelioma, for carcinoma and for sarcoma is widely different. The difference in tube, position of patient, etc., are taken into account. The treatment of sarcoma has been shown to be more effective when it has been divorced completely from operation. In a case of a mass of the tonsil filling the pharynx the growth had disappeared under treatment by the X-ray and the patient had been at work for over a year. The patient had been referred to him as inoperable by Dr. John B. Deaver. Differentiation, he said, is made between various growths. Hard growths are more amenable to X-ray treatment than soft; and the less rapid growths than the rapid growths.

Dr. S. Mason McCollin said he thought the difficulty was that physicians did not realize that the object is to get the effect, and this is to be gotten only by experience. In many cases the X-ray must be used almost to the burning point, when the effect is very rapid. When there was a resultant dermatitis an encouraging effect is secured.

The Value of the Stereoscopic Skiagraphy.—Dr. M. K. Kassabian reviewed the history of stereoscopy and described the methods, principles and technic and the application to the art of skiagraphy. He showed a special table and an adjustable plate changer or holder which he devised and by which he had overcome many difficulties. He exhibited X-ray negatives and prints by means of Wheatstone's reflecting stereoscope; also reduced prints and transparencies made from large negatives, by means of ordinary (refracting) Brewster's hand stereoscope. The value of this method, Dr. Kassabian pointed out to be as follows: In anatomy, in studying the structure of the osseous system, trabeculæ, sinuses, grooves, projections, the exact relations of the articulating surfaces of the joints; blood vessels, bronchi and other secretory and excretory canals; in surgery, in cases of fractures, the amount of deformity, the separation being as plainly visible as if the real skeleton were being observed. In dislocations the method will show the exact existing condition, as an ordinary skiagram cannot differentiate the backward dislocation from the forward one because the shadows will be the same. In examination for foreign bodies the surgeon will see foreign body by this method imbedded in the tissue in the relation to other organs. He urged that the method be employed in hospitals and in colleges in teaching anatomy and in private practice.

MEDICAL AND CHIRURGICAL SOCIETY OF MARYLAND.

Stated Meeting, held October 21, 1904.

The Final Results in the Treatment of Congenital Hips: Two Cases Treated by Lorenz.—Dr. Baer reported seven cases showing the results of operative and non-operative treatment in congenital dislocation of the hip. The first patient, a girl of five, had shown a dorsal dislocation of the left hip with a shortening in Bryant's line of 3 cm. Continuous traction was applied for five weeks, and then by means of forcible extension (Bradford's method) the head was brought to the acetabulum and replaced by the Lorenz method. Six months after operation the position was good and the stiffness then present yielded later to massage. Preliminary extension and the use of the extension apparatus at operation proved useful in this case. The functional result had been perfect. The second patient, a girl of five and one-half years, with shortening, external rotation and atrophy, had been operated on by Lorenz at the Johns Hopkins Hospital. The leg was flexed to 90 degrees and abducted, the abductor fibers being ruptured. The posterior muscles and the tissues in front of the joint were then stretched, and a plaster dressing applied; the leg being flexed on

the thigh, and the thigh on the abdomen and the leg flexed posterior to the plane of the body. The acetabulum was poor, and Dr. Lorenz gave a bad prognosis. Marked extravasation of blood occurred in the leg, and persisted for four months. The original dressing was removed in nine and one-half months, and the leg redressed. The anatomical result had been perfect (Bryant's line the same length on the two sides) and the functional result was proven, by the exhibition of the patient, to be equally satisfactory. The other patient treated by Dr. Lorenz on the same day had not done so well. The girl was eight and one-half years old, and the case a difficult one. On removal of the plaster nine months after operation the head was found bulging in the groin, 3½ cm. below and medial to the anterior superior spine, showing that an anterior transposition had taken place. The patient was unable to stand. Operation was done, and a rent in the capsule found through which the head of the femur had slipped. The head was replaced and the functional result was finally good. There was, however, about 2 cm. shortening, possible to correct by a bloody operation. In the fourth case reported the head had been brought to the acetabulum by preliminary extension and reduction then accomplished under ether by the Lorenz method. Six months later the head had slipped out, and this again occurred after a second reduction. At operation a rudimentary acetabulum was found and excavated, the head being replaced and the leg put up in *internal* rotation to overcome anterior bending of the neck. The fifth case showed a brilliant result. The patient was a girl of eighteen years, who had suffered with great pain and disability from double congenital dislocation. She was markedly sway-backed, and walked with a monstrous waddle. Both hips were treated by the open method. New acetabula being formed and preliminary traction being used. The patient had had a very good functional result, in spite of the marked coxa vara of both legs. Lordosis, pain and disability had entirely disappeared. One patient was shown whose convalescence after an open operation had been complicated by the formation of adhesions resulting in false ankylosis of the hip-joint. These had, however, been broken up under ether, and the final functional result was good, though a shortening of one-third inch had persisted. A seventh case showed a fair but not perfect functional result after the bloodless Lorenz method. In this patient anterior transposition of the head had occurred, due to anterior bending of the neck and failure to put the leg up in *internal* rotation. The lessons taught by this series of cases were that operative procedure is the method of choice when anterior bending of the neck is present, that preliminary traction is always advisable, that good results may be expected even in older cases, that the bloodless method is the better method in cases under six years of age (except when an anterior twist of the neck has occurred), and that the bloody method is the operation of choice after the sixth year.

Case of Subdiaphragmatic Abscess; Operation; Recovery.—Dr. Trimble showed a patient who had come to him with a history of a sudden attack of great abdominal pain ten days previous. The man was very ill when seen, pulse was 130, temperature high, abdomen distended. Constipation had been marked, but there had been no vomiting. The lower border of the liver reached below the umbilicus, and the heart and lungs were pressed up and out. A diagnosis of abscess was made. Posterior incision under light anesthesia showed an abscess containing pus and air under the diaphragm. Colon bacilli were isolated from the pus. The abscess was thoroughly evacuated, and a tube inserted for drainage. Temperature soon fell, and the liver receded, but signs of pleurisy appearing an aspiration was done, and no fluid obtained. A rib was then resected, and serum and pus found in the pleural cavity. Both wounds healed without event, and the patient was now well, except for retraction of the chest and a thickened pleura. Dr. Trimble also referred to another case of subdiaphragmatic abscess, and Dr. Watson reports two similar cases, in one of which a perinephritic abscess just under the diaphragm had shown, as the first symptoms, pain in the hip and a slight limp.

Tuberculous Cystitis—The Question of its Primary Nature.—Dr. Wholey reviewed the subject of tuberculous cystitis in connection with a case of his own, in which the condition was possibly primary in the bladder. This disease, according to Metz and Halle, never originates in the bladder for the reasons that concomitant lesions elsewhere are constant, vesical lesions are always less advanced, and hence of an obviously later origin than those found in other portions of the genito-urinary tract, and the vesical lesions are usually found near the vesical orifices (urethral or ureteral). The disease varies in its course from a slow, almost benign condition to an acute and very serious one. Sometimes it occasions no symptoms, and is not infrequently first discovered at the examination for life insurance. Spontaneous recovery has been reported by Paget. The treatment is difficult. Some cases are obviously medical, and others surgical; in the intermediate group of cases it is not easy to say what should be done. At a recent French congress in a discussion of the subject it was concluded that local medical treatment is rarely successful, that curettement, etc., are ineffective, that bladder tuberculosis is always secondary, and that nephrectomy is the only treatment for tuberculosis anywhere in the genito-urinary tract. The failure of surgical treatment is due in part to inability to detect the lesion early. When the disease is limited curettage, excision or cauterization may be of use. Dr. Wholey's patient was a man of eighteen years, with slight tuberculous family history, in whose urine albumin had been found one month previous by an insurance examiner. Frequency of micturition then developed without pain. The lungs were free, the kidneys impalpable. The urine contained a small amount of blood and pus, and many tubercle bacilli. Under irrigations of boracic and carbolic acids and injections of strong bichloride solution frequency had become much less marked, the urine clearer and the bladder capacity greater. There was no involvement of the prostate or epididymis, and the case might be one of primary tuberculous cystitis, though no cystoscopy had been permitted by the patient.

St. John's Guild.—A review of the year's work of this estimable charity shows that 2,500 infants and children have been treated at the New Dorp Hospital and that at least 28,000 babies, children and mothers had open-air outings in the floating hospital ship, the Helen C. Julliard.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held October 10, 1904.

The President, T. E. Satterthwaite, M.D., in the Chair.

Mosquitoes and Malaria.—The evening devoted to the general subject of tropical diseases. The first paper, with the above title, was by Major Junius L. Powell, Surgeon U. S. Army. In it he gave the results of a series of investigations during the past summer at Fort Hamilton, N. Y., as embodied in a report which he had recently made to the Government. There had been quite a large number of cases of acute malarial fever among the troops stationed there, but, although mosquitoes were abundant, the most careful and continued search resulted in the discovery of but a single specimen of the *Anopheles* genus. At the same time, there were conditions about the post and in its vicinity which had formerly been regarded as sources of malaria, and he could not believe, from this experience, that there were means other than the *Anopheles* mosquito by which the infection was conveyed.

Tropical Malaria.—The second paper was read by Dr. John V. Shoemaker, Professor of Materia Medica, Pharmacology, Therapeutics and Clinical Medicine in the Medico-Chirurgical College of Philadelphia. During and immediately after the Spanish-American war he had an opportunity of observing this disease as it presented itself among the soldiers brought to the Medico-Chirurgical Hospital. Having referred to the intensity of the clinical phenomena and to the profound modification which in hot countries occurs in the *Plasmodium* itself, he said that with the recognition of the parasite and the knowledge of its transmission by mosquitoes, the conceptions of malarial infection in its different forms have been rendered much more exact. The profession also gained an immensely important advantage in the posession of absolute scientific tests for diagnosis. The study of the *Plasmodium* in its various phases has enabled us to devise the classification based upon purely clinical phenomena. The malarial paroxysm coincides with the sporulation of a group of the parasites contained in the red blood corpuscles. If the *Plasmodium* is present in various stages of development, the discharge of the spores and toxins is irregular. Accordingly, the typical periodicity of symptoms is disturbed, and the fever assumes a remittent or continuous type. Dr. Shoemaker's worst cases were distinguished by the severity of the symptoms and the irregular course of the fever and were accompanied and followed by extreme prostration. Sometimes, but not always, the fever was followed by profuse sweats. One interesting case displayed a chill every morning and every afternoon for two weeks, each chill being succeeded by fever and sweats. One patient went to sleep at night with a violent headache and woke to find himself in a cold sweat, which was followed by a chill and fever, a reversal of the ordinary succession. In many instances there was such a blending of succeeding paroxysms with the febrile rise and fall that the record approached that of a continued fever. Several of the cases were accompanied by severe bronchitis. In a considerable proportion gastro-intestinal symptoms were marked; nausea and vomiting were common, and some of the men complained of much abdominal pain. Diarrhea or dysentery was met with in some instances; diarrhea in the beginning, followed by constipation, was observed in many. In most of the cases the spleen was enlarged; in some there was splenic tenderness without much enlargement. In several cases there was a marked discoloration of the skin, testifying to the alteration of the hemoglobin by the malarial parasite and its liberation from the red cells. In two cases which bore a close resemblance to yellow fever the men lay in a state of stupor attended with low delirium. The urine was often scanty and high-colored, containing bile-pigment. In several instances there was albuminuria, and in one, hematuria. Many of the cases showed a recurrence after a defervescence of ten days or two weeks.

Diagnosis.—As there were being brought into the hospital at the same time about five times as many typhoid as malarial patients, it was necessary to be extremely careful in the matter of diagnosis. Fortunately for accuracy, we are no longer dependent solely upon clinical observation. The presence, on the one hand, of the *Bacillus typhosus* and the evidence of Widal's test, and, on the other, the detection of the malarial parasite, suffice to settle the diagnosis respectively for typhoid fever or malaria. The cases with marked discoloration of the skin were distinguished from yellow fever by the longer continuance of high temperature and, above all, by the presence of the *Plasmodium malariæ* in the blood.

Treatment.—In the treatment quinine was the main reliance. In the worst cases, where the vomiting was so incessant that the drug could not be retained by the stomach, it was given by the rectum in suppository. The endeavor was made to anticipate the paroxysm by introducing into the system as large an amount of quinine as possible, and as a rule five or ten grains was given every two or three hours. In cases with constipation small, repeated doses of calomel produced movement of the bowels and at the same time served to allay gastric irritability. When diarrhea was present, equal quantities of quinine and salol (usually five grains of each) were combined with good effect. In some instances one-quarter to one-half grain of ipecac was incorporated in the suppository. When nervous symptoms were prominent, cannabis indica or monobromated camphor was combined with the quinine. If the bowel was irritable the suppository was preceded by an enema of starch water and laudanum. When the fever was high, the patient was sponged. None of the cases resulted fatally.

Chief Points of Interest.—The chief points of interest in this series of cases, Dr. Shoemaker said in conclusion, were the gravity of the symptoms, the very marked and prolonged debility, the resemblance of some to yellow fever, and of others to typhoid, the diagnostic value of the scientific test, and the efficacy of quinine administered in suppository when the stomach is intolerant.

Is Mortality Necessarily Higher in Tropical Than in Temperate Climates?—This question was discussed by Colonel Valery Havard, Assistant Surgeon General, U. S. Army, and his contention was that it is not. While it is a fact that mortality has been in the past and still is much higher in tropical climates, he believed that this was not because of the inherent effect of physical conditions, and therefore inevitable, but rather the result for the most part of violations of the laws of health, and therefore preventable. The health of cities is the resultant of many factors, of which latitude is only one and, in Dr. Havard's opinion, not the determining one.

Mortality up to the Present Time Higher in Tropics.—It is as yet impossible to state what should be the minimum mortality attainable by modern sanitary science. Taking, as a basis, the death-rate of the City of New York, 18.18 per 1,000 in 1903, we find that in Manila since the American occupation (four years) the rate has been 45.18. That of last year was 40.85, showing an improvement. The rate for Havana during the decade preceding the Spanish-American War was 36. In the City of Mexico it is commonly about 40, while in India it often rises above 100. During the year 1902 our army was almost equally divided between the United States and the Far East. While at home the mortality from disease was only 5.66 per 1,000, in the Philippines (Filipino troops not included) it was 20.85, or nearly four times as large, and for Filipino troops, 22.59. In 1903 medical officers in the Philippines had learned how to contend against the diseases which beset them, and the mortality fell to 11.14 for American and 18.17 for Filipino troops. It is in wartime that disease mortality runs beyond all bounds in the tropics, owing to the rapid dissemination of epidemic infection among large bodies of men. The highest rates from disease in tropical warfare during the second half of the nineteenth century were noted among French troops in the Soudan in 1888-89, when out of each 1,000 men, 280 died, and in Madagascar in 1895, when, to quote one of their surgeons, "everybody was sick and 50 per cent. died." It must therefore be recognized and admitted that up to the present day there has been a greater liability to sickness and death in the tropics.

The Physical Characterics of Hot Climates Capable of Affecting Health.—The physical or meteorological elements in a hot climate capable of affecting health are chiefly two: (1) Great and continued heat; (2) a high degree of humidity. In the tropics the amount of sweat is enormously increased, the results of which are a diminution of the total amount of blood and a decreased arterial tension. The urine is also much reduced, as well as the output of urea. In consequence of excretory function of the kidneys being diminished, more work is thrown upon the liver. Skin and liver are thus liable to be more or less congested, while the lungs are depleted. As, furthermore, tropical air, through heat expansion, contains less oxygen than that of colder latitudes, the result is decreased metabolism. It is an obvious fact, however, that less oxygen is needed in the tropics, since the calorific process is much less active. High humidity prevents free evaporation of perspiration, and must more or less interfere with the process concerned in heat generation and the active destruction and renovating of tissues, upon which depends bodily and mental vigor. Owing, however, to the constant air movements on tropical islands, this decreased evaporation is less than is generally supposed; so that, for instance, the average summer of Havana is less oppressive than that of Washington and all our Southern cities. The great central physiological condition of human health in the tropics is that the production of bodily heat shall be kept down within certain limits. Nature helps by diminishing the proportion of oxygen in the atmosphere, and we should assist by reducing the food, especially the calorifacient articles of diet. We may further assist by avoiding violent exercise and very active mental work. The result of this necessary tropical régime is a reduction not only of heat but also of nervous energy. By the use of a little prudence and discretion the body may be maintained in a state of normal equilibrium; but the loss of energy is chiefly felt by the mental faculties. Thus, the North American or European going to the tropics will generally find it easier to avoid deterioration of body than sluggishness of mind.

Bacterial Life in the Tropics.—Another important effect of heat and moisture is a great increase and multiplication of saprophytes, so that the decomposition of all organic matter is more rapid and complete. While the part played by saprophytes in reference to human health is rather ill-defined, it is not unlikely that they are more beneficial than hurtful. They are doubtless responsible for unpleasant odors, but it remains to be shown to what extent, if any, decaying animal or vegetable matter, however objectionable to our olfactories and our esthetic sense, is a cause of disease. Pathogenic bacteria are abundantly generated in the tropics, but so they are in temperate climates. The cholera spirillum and *Bacillus pestis* develop as readily on the banks of the Thames and the Seine as those of the Ganges, when given a fair chance. Even leprosy was in past centuries as common in Europe as it now is in Asia. The micro-organisms of typhoid fever and pneumonia are much more at home in temperate or even cold climates than in the tropics. The amoeba of dysentery, however, seems to require a constant high temperature. As to the mosquito, that bloody enemy of the human race, we find it everywhere, increasing in number and blood-thirstiness as we go northward, and rendering life unbearable during the short summer in Alaska and within the arctic circle. There is probably not a single State in the Union where the *Anopheles* cannot be found. Even the mosquito responsible for filariasis is not uncommon in our country. It would seem that the *Stegomyia* of yellow fever does not extend very far north, but probably far enough to make possible an epidemic in any of the large cities of the United Staes.

Most of the Diseases Causing High Mortality Preventable.—Dr. Hayard then took up in succession the principal diseases which are responsible for the high mortality in the tropics, and endeavored to show to what extent they are preventable by the application of the modern laws of hygiene. The report of the Board of Health of Manila for the year ending in April, 1904, he said, would afford a convenient text. In spite of the best efforts of the skilled sanitarians composing the Board, the death-rate still remains about 40, and evidently conditions exist there over which the authorities have but little control. There is a very high mortality among infants, the chief cause of death being assigned as "convulsions," and with a view to reduce this the Board has had prepared for dissemination among the people a circular, giving simple rules for the care of the new-born and the feeding of infants. It is expected that the education of the masses and their relief from utter poverty will in time materially diminish this unnecessary sacrifice of infantile life. In Havana, where the great bulk of the population is white, and of a higher grade of intelligence than in Manila, the infant mortality is lower than in New York. The disease causing the largest number of deaths both in Manila and Havana is tuberculosis; yet, as indicating that the climate is less at fault than sanitary conditions, we find among the Americans and Europeans living in Manila, about 9,000 in number, only 9 cases during the year, or just one per

1,000. Among our troops in the Philippines in 1902 the rate was 1.27, while it was only 0.50 among soldiers at home; but in 1903 the figures were reversed, 0.26 in the Philippines and 0.86 in the United States, the greater ratio at home being partly accounted for by the repatriation of invalided tuberculous patients. The air cure for tuberculosis is easiest, most practicable, and should be most successful in the tropics, but unfortunately there exists in Cuba and all other old Spanish colonies a deeply rooted prejudice against night air, which is believed to be deadly. This prejudice arose, naturally enough, from the havoc caused by those nocturnal pests, the yellow fever and malarial mosquitoes. When Cubans have learned to screen themselves from the mosquitoes without excluding the air, when they realize the value of free aeration night and day, making use of the flat house-roof as a dormitory, and when they recognize the danger of crowding in tenement-houses, as well as the necessity of clothing their naked children, the chances of reducing the death-rate from tuberculosis to the minimum will probably be better for Havana than for New York. One would naturally suppose that where phthisis is so prevalent, other chest affections would be common, but such is not the case; showing, once more, the specific distinctness of pulmonary tuberculosis. Next to tuberculosis, cholera was until recently responsible for the greatest number of deaths in Manila, but this, like other water-borne diseases, is easily preventable, and the Board of Health has succeeded in extirpating it; so that the reports for March and April of this year do not show a single case.

Dysentery is one of the most dreaded of the endemic diseases of the Philippines, not only because of its mortality of 1.18, but also on account of its tendency to become chronic and inveterate. This disease cannot be so easily checked as cholera, but an uncontaminated water-supply would undoubtedly soon put an end to it. In Cuba dysentery is hardly known, only three or four deaths from it occurring during the year in Havana. Beriberi is a common disease in certain parts of the tropics, in Manila causing almost as many deaths as dysentery. For the most part it attacks natives of poor constitution and undermined vitality, and as it apparently results from unsanitary food and surroundings it would appear to be amenable to the laws of hygiene. Yellow fever was once the scourge of the West Indies and South America. American intelligence and energy, during our occupation of Cuba, showed how easily that dreaded infection can be checked, controlled, and then completely extirpated. Malarial fever, in all its protean forms, is common in all warm countries, producing a mortality of 0.93 per 1,000 in Manila, although not a single death among Americans and Europeans. Considering the great mortality of malarial fever in the tropics, especially as seen in various military expeditions, it would seem that the plasmodium parasite possesses there a degree of virulence unusual in northern countries. The positive results obtained by the use of mosquito bars, as well as door and window screens, in this country, Cuba, Italy, the Philippines and other places demonstrate that the prevention of malarial fever, whether mild or pernicious, is a comparatively simple problem. Certain facts appear to indicate that we have in the tropics one or more non-malarial and still unrecognized types of fever. Bubonic plague produced a mortality of 0.49 in Manila, but only one death from it occurred among Americans and Europeans. Typhoid fever was formerly considered a disease of white races and of temperate or cold climates, but later experience has shown that tropical and semi-tropical countries are also liable to become infected. Its victims, however, are mostly foreigners, natives enjoying a large amount of immunity from it. The prevention of smallpox is simply a matter of vaccination in the tropics, as elsewhere.

Both in the Philippines and Cuba diseases of the nervous and circulatory systems constitute a considerable cause of mortality. While in Cuba Dr. Havard was struck with the number of people suffering from arteriosclerosis, a fact for which he was unable to offer any explanation; but as there were only 18 admissions for diseases of the heart and blood vessels, and not a single death among our 3,274 soldiers in Cuba and Porto Rico during the year 1902, the climate could hardly be considered an important factor. Hepatitis and hepatic abscess are generally the result of dysentery, and disappear with that disease. Leprosy is still too common among the natives of tropical and semi-tropical countries. That it could readily be reduced by strict isolation, and in time completely eliminated, there can be no doubt. As its parasite is also common in Europe and in our Southern States, anchylostomiasis, or hookworm disease, can scarcely be considered a tropical affection. The "sleeping sickness" of Africa is produced by inoculation with its parasite through the bite of a fly, and is therefore amenable to the same means of prevention as malarial fever. Bright's disease and acute nephritis, as well as cancer, are more prevalent in New York than in warm countries, and of diphtheria, scarlet fever and measles it may be said that they are a negligible quantity in the tropics.

Climate Plays But a Secondary Role in the Health of Any Country.—From what has now been said it would appear that the high death-rate of the tropics (aside from the great infant mortality characteristic of all semi-civilized populous countries) is due to endemo-epidemic diseases whose cause and mode of propagation are now pretty well understood, and which, therefore, are to a large extent preventable. As a final conclusion, is it not warrantable to say that the climate plays but a secondary rôle in the health of any country, that mortality is chiefly dependent upon the character, intelligence and knowledge of its inhabitants, of their understanding of the laws of hygiene and the extent to which they apply to their own special conditions? In other words, human health in any country is not according to its climate, but according to its degree of civilization and the quality of its government. For the ten years previous to 1898 the death-rate in Havana, as has been stated, was 36 per 1,000. When the Americans occupied it ordinary hygienic measures were at once applied and enforced, and means devised to provide work and food for the poorer classes. The result was that, notwithstanding the absence of any sewerage system, the mortality fell to 24 in 1900 and to 21.20 in 1902; remaining about the same in 1903, under the Cuban Republic. The writer was inclined to believe that when Havana has carried out its intention of constructing a complete modern sewerage system its rate of mortality will speedily fall below that of New York, and that if the Cuban Republic continues to govern itself with prudence and justice, Havana will become the favorite winter resort of North Americans. The fact that during the year

1902 the death-rate among the United States troops in Cuba and Porto Rico was only 3.36, while among those at home it was 5.66, shows that in those tropical islands as soon as American sanitarians had had time to get the prevalent diseases under control and guard the men from unsanitary influences, the ratio of mortality fell below that of the United States. While the death-rate of Manila is still very high (about 40), during the past year the rate among the American element of the population, which is principally composed of adult males, was only 9.05, and among the Spanish, consisting of the usual admixture of men, women and children, 15.45.

Proper Diet for the Tropics.—The last paper of the evening on this subject, was contributed by Dr. Harvey W. Wiley, of Washington, D. C., Chief of the Bureau of Chemistry, U. S. Department of Agriculture. Experience has shown, he said, that with a change of environment the character of the food must also be changed. If it were true that the activities of the human family were the same in all climates, then the quality of food necessary to furnish energy would be practically the same from the equator to the poles. In point of fact, however, human activity is greater in the temperate zones than it is either at the tropics or the poles, and hence the amount of food used up as energy is greatest in temperate zones. The great variant in food is that part of it which is necessary to furnish heat. As the quantity of food for furnishing heat is largest in the polar region and smallest at the equator, tropical foods should be less of a heat-forming character than those used in the temperate zones, and, especially those used in the polar regions. The kind of food par excellence which furnishes heat is represented by the fats and oils, which differ somewhat from the carbohydrates in that the latter are active both in building tissue and in furnishing heat and energy. As the amount of radiation or loss of heat by radiation is less in the tropics than in either of the other zones, the oils and fats should form only a moderate portion of the diet in the tropics. Furthermore, as the degree of activity is usually less by reason of the character of the climate, the quantity of matter necessary to repair waste tissue is evidently less in the tropics, and hence the quantity of nitrogenous food should be less in tropical than in temperate climates.

Fruit Diet Best.—It so happens that nature provides very abundantly in each zone the character of food which is best suited for that region. Thus, in the tropics the indigenous fruits supply most freely the character of food which seems best suited to the nourishment of the people. A fruit diet, as is well known, is one in which nitrogenous and fat elements are reduced practically to a minimum, while sugar and starch are far more abundant. The Bureau of Chemistry has lately taken up a study of many of the tropical fruits, and a table showing the composition of a number of the most common of these was presented. The principal oil food of the tropics is found in the cocoanut and their chief starchy food is derived from the cassava in some of its numerous varieties. The prevailing characteristics of the natural food of the tropics is found in the excessive quantity of sugar which they contain, or, as in the case of cassava, of starch. The amount of protein is very small, and the amount of oil is, with the exception of the cocoanut, not marked. On the whole, it appears that the natural tropical food is one composed of a large excess of carbohydrates, in which sugar predominates. The using of food suitable to the environment is one of the conditions necessary to the preservation of health, and those who go from temperate to tropical climates should be impressed with the importance of gradually changing the character of their diet from the highly nitrogenous one which is characteristic of the temperate zones to the highly carbohydrate diet which is characteristic of the tropics.

BOOK REVIEWS.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. By various writers. Edited by ALBERT H. BUCK, M.D. Vol. VIII. Umb Zym. William Wood & Company, New York.

DR. BUCK is to be congratulated in the completion of this really masterly work. We welcome him to a well deserved rest. The publishers are also to be thanked for the thorough evidence shown that they have desired to give to the profession a thoroughly good book, and both editors and publishers alike that combined the best reference book with which we are acquainted has been prepared.

We have had occasion from time to time to speak in commendation of this project and its performance, It deserves the highest praise. In some regards we cannot see how it might be improved, a few others, however, deserve a more thorough going over.

In matters of inorganic materia medica there have been many lapses—not in the newer drugs—these have been well and consistently handled, but the older friends of the pharmacopœia have not been taken up in the modern sense at all, and the concepts, already obsolete, will further show the effects of time on them.

Of modern pharmacology, save in isolated spots, there is a distinct lack. Here again, older ideas have been set forth, not so much to the present detriment of the work, but to the future student of pharmacology it will prove uninspiring.

Especially commendable have been the articles on histology, anatomy, embryology and pathology. They have been distinctly modern in the truest sense of the word, and have shown a most gratifying breadth of scholarship not often found in a work of this general nature. We wish that the same criticism might be made of many of the articles on clinical medicine and clinical surgery. Most of them have been very excellent, but far too many seem to have been made to order. The pace set by the major part of the book has been too hot for some of the writers, and their contributions do not show up as well as might be expected. It seems to show that our laboratory workers are more keen than our clinicians—an observation which seems not to have escaped our foreign visitors during the past few years.

Taking the work as a completed system, it is one that should find a wide recognition.

THE STUDENT'S HANDBOOK OF SURGICAL OPERATION. By Sir FREDERICK TREVES, Sergeant Surgeon-in-Ordinary to H. M. the King. New edition revised by the author and Jonathan Hutchinson, Jr. W. T. Keener & Co., Chicago.

THIS charming little book, so conveniently put together for pocket use, is abridged from the new edition of the author's "Manual of Operative Surgery." It is intended primarily for students who are preparing for the final examinations, or for those who wish to operate upon the cadaver. In accordance with this intention, all technical detail has been left out which concerns aseptic precautions, and all matters relating to

living tissues. The anatomy of the parts is touched upon only casually and the sole attention given to instruments is a bare statement of the number and kind required.

A great deal of attention is devoted to the chapters on amputations and on the ligation of arteries.

It goes without saying that from the pen of so famous a writer as Sir Frederick Treves, nothing but the best is to be looked for, and endorsements of his style, and his teaching are hardly in place. From the standpoint of the American student, it is most valuable to have presented in so terse a manner the technic of the master of English surgery. It must be stated, however, that the one possible drawback to the use of the book in this country, lies in the fact that many operative measures, which are in general vogue here, are not to be found in the manual, whereas a good deal is presented which is at variance with our American teachings. This, in a measure, emphasizes the value of the fact already noted that the book presents in the terse and direct manner characteristic of Treves, a simple outline of surgical technic as it is to-day practised in England. For comparative purposes, if not for actual reference use, the volume must be of the very highest service to every student. There is no better means to forge fleeting technical facts into the brains, than a comparing of England's technic with our own.

Medical Diagnosis. Special Diagnosis of Internal Medicine. By Dr. Wilhelm v. Leube. Authorized translation from the Sixth German Edition, By Julius L. Salinger, M.D., Physician to the Philadelphia Hospital. D. Appleton & Company, New York and London.

Leube's Diagnosis has been the great book in diagnosis among the German-speaking students of the world. It has been one of the most practical and useful of the works of its class, and Dr. Salinger and the Appletons have performed a really meritorious service in placing it before the American student and practitioner of medicine.

There is little doubt that diagnosis rests at the bottom of rational medicine. Without a correct appreciation of the actual pathological conditions, treatment is largely a matter of hocus pocus, a regular Janus, one side deluding the patient, the other the physician himself. One of the healthiest signs of the condition of medicine in this country has been the great number of text-books on diagnosis; and we welcome this old one in its new guise.

The modest introduction to this American edition by the author bespeaks for it a welcome from its numerous friends, and hopes that it may contribute to the stimulation of the pleasure in the development of medical science and the appreciation of diagnostic art. We feel that it will do this and more, it cannot but help to raise to a higher level of professional efficiency all who study it conscientiously.

Practical Materia Medica for Nurses, with an Appendix. By Emily A. M. Stoney, Graduate of the Training-School for Nurses, Lawrence, Mass.; late Head Nurse Mercy Hospital, Chicago; late Superintendent of Training-School for Nurses, Carney Hospital, South Boston, Mass. Second Edition. W. B. Saunders & Company, Philadelphia, New York, London.

In a subject of such great scope as Materia Medica, it is almost as important to know what need not be taught as to know what to teach, and as a work for medical students must needs contain much of therapeutics and other things of only secondary importance to a nurse, it is a wise plan to have special books for nurses. Of these special books the one before us is to be commended for its suitability to its purpose. The alphabetical arrangement might be criticized, were it not that the author has given a very good therapeutic classification of remedies in the earlier part of the book. The concise and readable type, the inclusion of many unofficial drugs, the added chapters of Poison Emergencies, Mineral Waters, Weights and Measures, Dose and other lists, Abbreviations and Glossary, and, we might add, the employment of thick but very light paper in the making of the book, induce us to give it our highest commendation. A short chapter on prescription-reading might be added with advantage. The doses are given in both English and Metric Systems.

The Theory and Practice of Infant Feeding, with Notes on Development. By Henry Dwight Chapin, A.M., M.D., Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital; Attending Physician to the Post-Graduate, Willard Parker and Riverside Hospitals; Consulting Physician to the Randall's Island Hospital. Second Edition, revised, with numerous illustrations. William Wood & Company, New York.

It is only a short time since we commended the author on the readableness of his first edition. There the principles of infant-feeding and the method of obtaining good milk were discussed at length. But so much work has been done recently in this field that the author has found it advisable to introduce new matter in many places. The supposed distinctive difference of breast milk being alkaline and cow's milk acid has been proven a fallacy. Alkalies added to milk prevent the stomach secretions from curdling the milk and enable it to pass into the intestines in a soft or fluid condition. These are some of the newer findings. Many minor changes have been made throughout the book, and it will doubtless be received with favor by physicians, as was the first edition.

A Compendium of Chemistry. By Dr. Carl Arnold. Translated by Dr. John A. Mandel. John Wiley & Sons, New York.

Arnold's work has always received special support from the student of chemistry, and even the professional man, by reason of its conciseness and philosophic grasp of general chemical principles.

It is particularly opportune to have at this time a translation of so modern a book, and we feel assured that it will serve the useful purpose it has served for so many years in the home of its early appearance.

BOOKS RECEIVED.

Year-Book of the Medical Association of Greater New York. 8vo, 193 pages. Published by the Association.

Action of Light as a Therapeutic Agent. By Dr. L. K. Hirshberg. 8vo, 49 pages. Snow and Farnham, Providence.

How to Cook Food for the Sick and Convalescent. By Helena V. Sachse. 12mo, 297 pages. J. B. Lippincott Co., Philadelphia.

Studies from the Rockefeller Institute for Medical Research. Volume II. 1904. 8vo, 250 pages. Illustrated. Published by the Institute.

Suppression of Tuberculosis. By Prof. E. von Behring. Translated by Dr. Chas. Voldman. 12mo, 83 pages. John Wiley & Sons, New York.

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ORIGINAL ARTICLES.

A CASE OF ENTERIC FEVER COMPLICATED BY POLYURIA.[1]

BY J. C. WILSON, M.D.,
OF PHILADELPHIA.

THE moderate polyuria which often attends the period of defervescense and early convalescence in the acute febrile infections is too well known to excite comment, and the literature abounds in instances of glycosuria as a complication of these diseases. But transient non-saccharine polyuria at one time exceeding, as in the following case 6,000 c.c. in twenty-four hours, developing in the course of an attack of enteric fever and subsiding with the decline of the temperature, must be very rare. I have never before had the opportunity of observing such a case, and such examinations of the literature as I have had made fail to discover analogous cases. Very recently, I learn that my friend, Dr. Fussell, has observed a similar case, which he will report on this occasion. For nosological purposes it would be well if the distinction between polyuria as a symptomatic and transient condition and diabetes insipidus as a substantive affection, a distinction corresponding to that between glycosuria and diabetes mellitus, were more generally observed.

Enteric fever with prolonged and peculiar delirium in a male adult, complicated by massive polyuria developing in the mid-course of the attack and subsiding with the fall of the temperature. Treatment, systematic cold bathing. (Notes by Dr. Kalteyer.)

REPORT OF CASE.

J. W. V., aged twenty-nine years, single; birth place, Michigan; occupation physician. Admitted to the medical ward of the Jefferson Hospital September 25, 1902.

Diagnosis.—Enteric fever, complicated with polyuria.

Family History.—Father, mother, two brothers and one sister living and in good health. There is no history of neuropathic, cardiac, or tuberculous disease in the family. The patient's mother suffered from cancer of the breast, which three years ago was successfully removed by operation and has shown no signs of recurrence.

Previous Personal History.—The patient was informed that he had measles and chickenpox in early childhood. At the age of six years he suffered from diphtheria. Some years ago, he had an attack of catarrhal jaundice which lasted for about ten days. At twenty-six years, he suffered from an acute illness of about a week's duration, which was said to be acute appendicitis, the principle symptoms of which were colicky abdominal pains, at first general and later localizing itself in the right lower abdominal quadrant; vomiting and fever. He made an uneventful recovery without operation, and so far has not had a relapse. After this illness he enjoyed good health until the present illness. He has never suffered from Neisser's disease or syphilis; he has used alcohol moderately and smoked occasionally.

History of Present Illness.—Four days prior to his admission into the Jefferson Medical College Hospital, he complained of loss of appetite, malaise, and severe frontal headache. The patient states definitely that previous to September 21 (four days before entrance into the hospital) he appeared to be in excellent health; his duties, which consisted of an obstetrical practice in Philadelphia, made great demands upon his time. During the past summer he was in the habit of drinking unfiltered and unboiled water. On Monday morning, September 22, his condition had somewhat improved; he had slight browache, although soreness in the muscles of his limbs was a prominent symptom and his appetite remained impaired. On Monday evening his temperature registered $99^{2}/_{5}$° F., headache grew worse, and becoming somewhat anxious about his condition, he took 1½ grains of calomel in divided doses. On Tuesday morning he had a loose bowel movement; his temperature registered 99° F., headache was now constant and distressing, and weakness pronounced. In the evening his temperature registered $101^{2}/_{5}$° F. On Wednesday morning, the temperature was 101° F., his condition was decidedly worse, and in the evening the temperature rose to 103° F., during the course of the day the symptoms previously mentioned intensified. He took to his bed on Thursday morning, when he was admitted to the hospital.

Condition on Admission.—Temperature 101.2° F. (axillary); pulse rate, 90; despiratory rate, 20; cheeks flushed; pupils dilated, and the tongue coated lightly on its dorsum with a whitish fur. The abdomen was somewhat tympanitic, the spleen could not be palpated, but on percussion evidence of enlargement was noted. The heart and lungs appeared normal.

Blood examination revealed the following:

Erythrocytes	4,580,000 per cubic millimeter
Leucocytes	8,600 per cubic millimeter
Hemoglobin	80 per cent.
Color index	.88

The blood gave a positive agglutination reaction with the *Bacillus typhosus*.

The urine did not give Ehrlich's diazo reaction.

On September 27, two days after admission,

[1] Read by title at the meeting of the Association of American Physicians, May, 1904.

a single rose spot which disappeared on pressure and reappeared when pressure was released, was discovered in the epigastric region.

The treatment ordered on admission was as follows: Liquid diet—milk, broths, etc., at three hour intervals; one grain of calomel in divided doses. Sponging with water having a temperature of 60° F. when his axillary temperature rose as high as 102° F., and tubbing in water at 70° F., when his temperature registered 103° F. or higher, every three hours. During the plunge a half a dram of aromatic spirits of ammonia was administered. At intervals of six hours a Leiter's coil was applied over the heart through which hot water was passed for about a minute and then cold water for about twenty minutes. On October 1, when Prof. Wilson took charge of the service, the treatment was modified. The diet was unchanged, but other measures were discontinued, and bathing in water having a temperature of 70° F. was ordered every third hour craving water which was given to him in liberal amounts. The delirium became more severe during the third week, when a peculiar wandering of mind was present. He frequently complained of thirst, and became difficult to manage.

His mental agitation was accompanied by considerable restlessness. As a rule, the delirium conformed to an active type and the patient often engaged in conversation with those about him. He was in the habit of discussing various medical topics incoherently, and his thoughts seemed to dwell upon his condition. The mental derangement continued into convalescence and subsided very gradually. Subsidence of the polyuria was also gradual. On October 16, valerianate of zinc in one-grain doses and ergotine in three-grain doses were administered three times per day. After he had fully regained consciousness, he remarked that he recalled but few events of his illness except that his mind was often clear during and for a short time after the plunge.

when the temperature in the axilla registered 101.5° F. The patient was given one-half ounce of whisky during and after the plunge.

The disease seemed to run a typical course except that delirium of a low wandering type later becoming very active, manifested itself early and was quite constant, abating only after the plunges, when, as a rule, the mind remained clear for a short time. Crops of rose spots were observed from time to time.

The lower edge of the spleen was palpable during the second week. The pupils remained dilated; the tongue became very dry, and its coating was thick and brown. He often complained of dryness of the mouth. Constipation prevailed during the entire course of the illness, being especially pronounced in convalescence. Enemata were given at regular intervals. Emaciation set in rapidly. The quantity of urine began to increase on October 5, and urination became frequent. The highest amount voided was 215 ounces on October 16. The patient suffered from an unquenchable thirst. He was constantly

Polyuria was a most conspicuous sign and while this was most marked, micturition was so frequent that is was necessary for the patient constantly to have a urinal either upon his bed or upon the table adjoining it.

The accompanying chart shows the daily variations in the amount of urine during the course of the illness:

Urine examination, September 27, 1902.—The quantity of urine for the twenty-four hours preceding was 30 ounces. Color, amber; transparency, clear; specific gravity, 1.018; reaction, acid; albumin, a faint trace present; sugar, not present; urea, 2.1 per cent.

Microscopical examination.—Amorphous urates, squamous epithelial cells, and a few granular casts were found.

Urine examination, October 8, 1902.—The quantity of urine for the twenty-four hours preceding was 55 ounces. Color, straw-colored; transparency, clear; specific gravity, 1.003; reaction, acid; albumin, a faint trace present; sugar, not present; urea, .7 per cent.

Microscopical examination.—Amorphous urates and squamous epithelial cells were found.

Urine examination, October 11, 1902.—The quantity of urine for the twenty-four hours preceding was 80 ounces. Color, straw-colored; transparency, clear; specific gravity, 1.004; reaction, acid; albumin, a faint trace present; sugar, not present; urea, .8 per cent.

Microscopical examination.—Amorphous urates and squamous epithelial cells were found.

Urine examination.—October 16, 1902.—The quantity of urine for the twenty-four hours preceding was 215 ounces. Color, straw-colored; transparency, clear; specific gravity, 1.005; reaction, acid; albumin, a faint trace present; sugar, not present; urea, .6 per cent.

Microscopical examination.—Amorphous urates and a few squamous epithlial cells were found.

Urine examination, October 18, 1902.—The quantity of urine for the twenty-four hours preceding was 130 ounces. Color, light straw color; transparency, clear; specific gravity, 1.001; reaction, faintly acid; albumin, a faint trace present; sugar, not present; urea, .3 per cent.

Microscopical examination.—Amorphous phosphates and a few pus cells were found.

Urine examination, November 17, 1902.—The quantity of urine for the twenty-four hours preceding was 40 ounces. Color, amber; transparency, clear; specific gravity, 1.015; reaction, acid; albumin, not present; sugar, not present; urea, 1 per cent.

Microscopical examination.—Amorphous urates, in a few epithelial cells, and a few pus cells were found.

The total amount of urea for periods of twenty-four hours, was increased at the height of the polyuria, and the accompanying chart illustrates the variation in the total amount.

Convalescence was uninterrupted and uneventful. The patient was given a soft diet after his temperature had remained normal for seven days.

He was discharged from the hospital on November 25, 1902, and has remained well until the last report about the close of the year 1903.

After the polyuria had reached an amount which excited our special interest, a daily record of the quantity of fluid ingested was kept. It is a matter of regret that this document, which properly forms part of the history of this case, has been mislaid. The polydipsia was as marked as the polyuria, and no restriction was placed upon the amount of water given the patient except that no single draught should exceed two ounces, it having been found that the craving recurred as quickly after larger quantities.

I have no hypothesis to offer as to the significance of the polyuria in this case. It was evidently the cause, not the effect of the great intake of fluid; the patient was neurotic and overworked but did not present the symptoms of any organic disease of the brain or nervous system. It cannot, in view of the enormous number of cases of enteric fever that have now been treated by systematic cold bathing, be ascribed to that measure, since many accurate studies of the urine have shown a very constant moderate increase but no such enormous output as in the foregoing case.

REPORT OF THE MEDICAL DIRECTOR OF ST. JOSEPH'S SANATORIUM TO THE ADVISORY BOARD.

BY E. S. BULLOCK, M.D.,
OF SILVER CITY, NEW MEXICO.

The establishment of St. Joseph's Sanatorium was an attempt, the first, I think, to supply the need of a properly equipped, closed institution, for the treatment of tuberculous invalids in the Southwest. During my own often ill-advised wanderings over the arid region in search of health I was continually reminded of the necessity for such an institution, both by my own observations and from seeing the experiences of others. As time went on it became my ambition to provide such a sanatorium at some especially favored spot in the Southwest, to fill what seemed to me a crying need. An idea also took shape in my mind that the exact formulation of the value of climate in phthisiotherapy is of great importance to medical science. After six years daily work among consumptives out West I still lack the data which would determine the precise value of climate in the treatment of tuberculosis. A small number of cases is a very insecure basis for the derivation of scientific statistics, and for this reason I have not yet been able to see the truth clearly, much less to aid others to do so to any extent. Amid the conflicting opinions as to climate and its value (the positive statement of Dr. Flick that equally good results can be obtained in Philadelphia, and that no less certain opinion of Dr. Solly that climate is of prime usefulness), I decided that to bring order out of confusion would require extensive data from an institution located in the very center of a favored zone and complying with all the requirements of modern phthisiotherapy. I trust I have made clear the ideas which constitute the very foundation of St. Joseph's Sanatorium.

By meeting and knowing the Reverend Mother Paul of the Order of Sisters of Mercy, to whose clear-sighted intelligence St. Joseph's owes its existence, I was enabled to take the first steps in the realization of my ambition. We chose Silver City as the proper location of our prospective institution for the same reasons which actuated the army officials in selecting Fort Bayard as the site of the Government Sanatorium. They had an extensive experience in the Southwest, and were thus well aware of the fact that summer and winter, year in and year out, Grant County, New Mexico, provides the ideal in atmospheric environment. Glorious sunshine, maximum dryness, cloudless skies, warm winters, cool summers, an air so clear that on moonlit nights one can see the trees on the mountains twenty miles

away, these with little dust and comparative freedom from high winds, and all at the most favored altitude, 6,000 feet, make the sum of the climatic advantages of the mountainous portions of Grant County.

During the summer of 1901 I resigned my position as pathologist at Fort Bayard and came to Silver City, to aid in establishing the institution which forms the subject of this report. At Silver City the Sisters had a small building, with five suitable rooms opening upon a porch and available for patients. They had, however, plenty of ground and trees, which, as the institution developed, made a valuable feature. The small building mentioned, which is now used as an infirmary, was the nucleus of our present plant. In order to insure the perpetuation of our ideals it seemed important that the scientific management of the institution should be vested in an Advisory Board composed of men especially interested in tuberculosis. Such a Board was at once instituted, and has proved our most valuable asset; for its members have sent us most of the few patients we have had, and have always been ready to furnish opinions upon matters submitted to them. As at present constituted this Board consists of the following members: Drs. J. Solis-Cohen, Philadelphia; S. Solis-Cohen, Philadelphia; W. C. Glasgow, St. Louis; H. M. King, Liberty, N. Y.; Seymour Oppenheimer, New York; E. Fletcher Ingals, Chicago; E. L. Shurly, Detroit; S. E. Solly, Colorado Springs; J. N. Mackenzie, Baltimore; J. C. Wilson, Philadelphia; H. L. Loomis, New York; J. H. Musser, Philadelphia; J. R. Arneill, Denver; C. G. Jennings, Detroit; J. H. Burtenshaw, New York; J. B. Huber, New York; R. B. Preble, Chicago; Alfred Meyer, New York; A. R. Edwards, Chicago; Alfred Stengel, Philadelphia, and Hermann Chicago; E. F. Wells, Chicago; W. E. Casselberry, Chicago; R. W. Myles, New York; H. C. Wood, Jr., Philadelphia; Frank Billings, Chicago; Alfred Stengel, Philadelphia, and Hermann Biggs, New York.

It was the idea of those in immediate control of the institution that as soon as it became practicable the medical part of the work at St. Joseph's should be under the supervision of this Board, that its control in this respect should be actual rather than nominal and honorary. To-day seems a most auspicious occasion for the carrying out of this idea; and I am here as the representative of the Sisters of Mercy to tell you about our work, to try and make you understand what we are doing out in the desert, and thus to realize one of our most cherished ambitions. It is our hope that you will form such an organization and elect such officers as will best serve this valuable scientific project. I am sure that I do not overstate the case when I dwell upon what such an institution in the Southwest means to medical science, and particularly to the unfortunate class sent West in search of health. Following the organization of the Board, the power to elect new members to it will be in the hands of its members.

It has always been our practice to send to the home physician a monthly report of the patient's progress. This, it seems to me, is a wise plan and one that should be continued, for it enables the physician sending the patient to follow the case and witness its termination, and also serves to maintain his interest in the work.

In order to provide suitable accommodations for patients it soon became necessary to erect additional buildings, and six months after the establishment of St. Joseph's, money was borrowed for this purpose and work commenced. The ambulant building, so-called from the fact that it accommodates patients without fever, is built around a court filled with trees. It is but one room thick, and without halls, which in our climate are unnecessary and would make dead air spaces unsuitable for ideal ventilation. It has a porch on both inner and outer sides, in all 600 feet long. Each room opens upon the porch from both sides. A building so constructed, with brick walls between the rooms, really forms a series of cottages, and has proved most convenient as regards the handling of patients and their personal comfort. In our region the atmosphere is rarely perfectly still, even at night, and careful investigation has proved to me that in these rooms the patient gets a constant supply of pure air. On this account we do not make any special feature of sleeping out of doors, though patients are permitted to do so if they so desire.

Each room is connected with the Sisters' dormitory by an electric bell. The rooms are heated by small stoves, though a fire is only required in winter when patients get up and again when they go to bed. The buildings are all lighted by electricity. A large recreation room with billiard table and other amusement features occupies one corner of the ambulant building. In the basement of this building, all above ground, are the executive offices, laboratory, and hot water heating apparatus. An adequate supply of bath and toilet rooms connect with a private sewer. The present debt of the institution was the cost of the ambulant building. Our present capacity is twenty-five patients, though as yet all the rooms have never been occupied at one time. We do not contemplate a much larger plant, for careful individualization of cases, so necessary to the highest success, is not compatible with a large number of patients. A few tent cottages, for the accommodation of patients desiring them, have been erected, though when a building constructed with every attention to ventilation can be obtained, I much prefer it to the less durable tent cottage. Patients without fever take their meals in a common dining room, and on account of the small number of women, a separate dining room is provided for them.

As far as possible and consistent with humanitarian action, hopeless cases are excluded. If

after sufficient observation I am convinced that nothing is to be gained by further treatment, I do not hesitate to advise a patient to go home, for this is not only just to the patient in question, but also to the others, as the depression which always follows a death in an institution where the patients are known to each other should be avoided if possible. From the beginning it has been the object of those in charge to make the cost of treatment as low as possible. On a basis of our present average of 15 patients $100 per month is the lowest rate compatible with meeting our obligations and the ordinary expenses of the institution. When a larger number of patients render it practicable we hope to reduce the cost. The rate of $100 per month includes everything required by the patient except clothing. It will be impossible to contemplate the establishment of a free department, which we have always had in mind, until we possess an endowment, and when the isolation of our location and the poverty of the Southwest are considered, it seems that the acquisition of such a fund must be a good way in the future.

As regards the features of daily life which contribute to cure, the discipline maintained in rigid. We have never hesitated, no matter how badly we needed the patient, to discharge anyone who, after due warning, refused to follow instructions. Patients are not permitted to leave the institution without the consent of the physician in charge. All sputum is placed in individual paper spit-cups, which are collected and burned as often as necessary. The rooms are wet-cleaned daily, and all bedding exposed to sun disinfection every day. Each room is carefully disinfected with formalin upon being vacated. Patients with constant slight fever, or those in whom the daily maximum temperature is over 100° F., are given actual cadaveric rest in the open air. Those with a normal temperature, or those in which the daily maximum temperature is above normal but less than 100° F., are given rest or moderate exercise as seems indicated. There is nothing I have come to fear more than too much exercise. Even in normal temperature cases, I am a firm believer in only sufficient exercise to maintain appetite and digestion.

Unless otherwise indicated, all patients are fed six times daily; three full plain meals and light feedings between meals and at bed-time, usually consisting of eggs, milk, bread, and butter. Each patient is visited every day, and those in the ambulant class report to the office of the Medical Director each morning for observation and treatment. Following the theory that disinfection of the air passages may prevent the infection of new areas, each patient is given every day an inhalation of a nebulized solution of trikresol and methylendiamine. All inflammatory processes of the respiratory organs receive careful attention. Sputum adherent to the larynx is washed away. Tuberculous complications of the accessible respiratory organs are treated twice daily. The principles which underlie all our therapeusis should be termed physiological, for by means of careful, persistent individualization, an attempt is made to maintain each and every organ at its highest efficiency. As I understand it this constitutes almost the whole of phthisiotherapy to-day. Once a month, or oftener if necessary, each patient receives a thorough examination, including sputum, blood, and urine.

Lack of space will not permit more than a passing reference to a few of the most interesting aspects of treatment. There are, however, some matters in this connection to which I desire to refer briefly: As long as progress towards health is uninterrupted it is my practice to treat patients upon strictly physiological lines, though always being ready to interfere if things go wrong; for, instance, a reasonable time is allowed to pass after placing patients under proper conditions, and if the fever still persists, a series of sputum examinations is made to determine if the streptococcus is constantly present. If so, the patient receives streptolytic serum, which under such conditions had been of great assistance to me. Even if it does not cause a complete removal of febrility there is frequently an amelioration of fever as well as of other toxic symptoms. My experience has been that if the streptococcic infection can be removed the patient is much better able to handle the tuberculous and other infections, and often does so. There are times when the use of this serum seems a direct life-saving measure, converting an apparently hopelessly febrile case into an ordinary one. In continuously febrile cases, in which every means employed fails to lower the temperature, nothing remains but to send the patient home, for as I shall be able to indicate statistically later, climate, with everything else, must be admitted to be nearly a complete failure in this class of cases.

In very chronic cases with cavities and extensive fibrosis, in which the sputum is difficult to raise, the fluid extract of coccillana has often proved valuable. I have a number of such cases in which the patients state they could hardly dispense with it. Coccillana is best administered in a syrup in doses of fifteen to thirty drops every three or four hours. In hemorrhage, and especially chronic blood-spitting, we have a potent remedy in the chloride of calcium, which may be employed in much larger doses than are usually recommended. When given well diluted with water I have never seen it disturb digestion. Carbonate of guaiacol, carbonate of creosote, and benzosol, have a well-defined usefulness in the treatment of the associated infections of pulmonary tuberculosis. In pure tuberculosis in which there is a normal temperature I have never been able to convince myself that they are of any value. Their field is found in those febrile cases in which the streptolytic serum is either not indicated or is insufficient to remove all of the mixed infection. Benzosol and the carbonate of

guaiacol may be used for quite extended periods without disturbing digestion, and are, in fact, often beneficial in fermentative indigestion, especially that form associated with foul breath.

One of the hardest tasks presented to the phthisiotherapist is that of preventing undue loss of body proteids, and for this purpose ichthyol is second only to a proper dietary in aiding nutrition and arresting loss of weight. I have frequently tested its use by withdrawing it from a patient who was apparently thriving upon it, and immediately loss of weight would follow, to be checked only when ichthyol was again prescribed. Irrational as it may seem with our present knowledge of tuberculosis I am quite ready to say a good word for counter-irritation in the form of blisters applied over an active lesion. I have seen temperature drop a point or two coincident with their employment, especially if the bleb is carefully preserved and the serum permitted to resorb—a point I learned from my friend Dr. J. Solis Cohen.

In laryngeal tuberculosis, especially of the ulcerative type, I am convinced that frequent disinfection with formalin is a valuable procedure. In such cases, in those who can be taught to do it, I direct the patient to spray the larynx with formalin solution several times daily, and twice every day they report to me for careful mopping with the same solution. After all is said and done I am, however, convinced that in this class much more depends upon getting the patient into good condition than upon any local treatment. When the patient improves generally, improvement in the larynx usually follows, and per contra, in a steadily failing patient nothing but relief of pain is accomplished by laryngeal medication.

Anent the discussion of the place of climate in phthisiotheraphy, it seems worth while to mention some facts deducible from our experience. A case is often sent to us in which the patient before leaving home was having a daily chill, high fever, sweats, and profuse expectoration. Immediately upon his arrival in our climate these conditions are changed. The chills and sweats cease, fever comes down from two to three degrees, and the sputum is greatly diminished in quantity. Such an experience is much too frequent to be accidental, and too sudden to be accounted for by change in management, and if such a manifest amelioration occurs in otherwise hopeless cases, what must be the climatic influence in a more hopeful class? Though not so graphically presented it is probably none the less actual and positive. Among our patients sweats and chills, and diarrhea not due to tuberculosis of the intestine, are so rare that I can with difficulty recollect having prescribed for a patient presenting them. We have a number of patients with very chronic and extensive lesion, who occasionally come to us for advice and treatment. Should such go home for a visit they are always glad to return and again experience the resulting amelioration in symptoms which had developed and become annoying during the stay at sea-level.

An almost complete absence of pleurisy and pleuritic pain is evidently accounted for by the quiet sanatorium life. Hemorrhage is with us a very occasional manifestation of pulmonary tuberculosis. At St. Joseph's six months at a time have elapsed without the occurrence of a single hemorrhage. This is, of course, partly accounted for by the quiet life the patients lead, and yet some credit should undoubtedly be given to the diminution in atmospheric pressure which follows residence at a high altitude, an experience substantiated by experience with the pneumatic cabinet.

The apparent permanency of the different types of pulmonary tuberculosis is a characteristic worthy mention. For instance, cases in which the temperature does not drop below 100° F. within a reasonable time after admission—a month or two—remain permanently febrile. Cases afebrile upon admission, or those in which the temperature drops below the febrile point shortly after admission also exhibit the same marked permanency of type, as do the afebrile cases without bacilli in the sputum. This characteristic is often of great assistance in making a prognosis during acute exacerbations, for in chronic tuberculosis, with few exceptions, the future course of the disease will be like the past. As regards the length of time necessary to effect a cure, even in incipient cases, I have changed my ideas very much. It is, I am sure, much longer than we have been led to suppose. At St. Joseph's it is only seldom that I am privileged to witness a genuine cure. Human nature is such that even in cases in which progress toward health is constant and uninterrupted, patients will not remain under treatment longer than about six months. It is a fact that the more rapidly they improve the more difficult they are to control. Very great improvement is the rule at our institution, but cures require more time than patients will allot to it, even though money may not be a consideration. Lack of means is, of course, an insuperable obstacle to a long stay, though it occurs rather more infrequently than might be expected. As an offset to this tendency to break treatment after about so many months have elapsed, it is our practice to keep in close touch with our discharged patients in good standing, that is, those who leave the institution with our consent, and to maintain our connection with the case as long as the patient remains in the country. It is our desire that until ready to go home they should look to the institution for guidance and help in time of need. Occasionally it is my privilege to witness a truly wonderful struggle for life and health, very gratifying to one who so often sees the discouraging frequency with which patients will break their connection with a system which has proved so profitable to them. It is a fact that those having the hardest struggle make much the more creditable and persevering patients.

With the exception of an occasional cold we

have never witnessed any intercurrent affection among our patients. This is, it strikes me, the highest possible tribute to the hygienic environment, climatic and otherwise. This absence of complicating diseases must be very advantageous to the pulmonary invalid. A most careful study of family histories seems to indicate that a distinct family predisposition to the disease is really a rare phenomenon, if it exists at all, and that favorable opportunity for infection plays the leading rôle in causation. A previous depreciated condition of the body due to acute illness, particularly other infectious diseases, seems to have a direct connection in many cases with infection with tuberculosis.

In regard to the presence of adventitious organisms in the sputum, I am quite sure that their number and the frequency of their occurrence depends very largely upon whether the sputum has been contaminated with mouth and throat organisms. The smaller the quantity of sputum and the more difficult it is to raise, as in incipient cases with few or no bacilli, the more constant is the occurrence of adventitious organisms. It thus follows that it is a great mistake to make a diagnosis of mixed infection from sputum findings alone. The clinical picture of sepsis must be, after all, the real criterion.

A diazo reaction in the urine is confined to hopeless cases as a rule, though occasionally present during acute exacerbations. The constant presence of this reaction is, of course, an indication of great disorganization of metabolism, though not at all necessary to an unfavorable prognosis, the clinical picture being amply sufficient for that purpose in such cases.

As regards the blood findings in tuberculosis, nothing except the presence or absence of anemia is of much importance clinically. Marked degenerative changes, like the diazo reaction, occur, as a rule, only in very unfavorable cases. If fever is present there is always a leucocytosis, which varies constantly with the degree of fever; therefore, to know the leucocytosis it is only necessary to be familiar with the temperature, except, of course, in miliary tuberculosis, in which leucocytosis does not occur. The presence of anemia is much more correctly indicated by the appearance of the patient than by any instrument so far devised. In very chronic cases especially, in which there is an anemia of quantity rather than of quality, so-called instruments of precision fail to indicate the condition. In this type of anemia I have not been able to see that the administration of iron accomplishes anything. If upon admission a patient presents a marked degree of anemia, as shown either clinically or by the hemoglobin scale, it is my practice to administer iron. If the degree of anemia is slight, I pay no attention to it unless it persists, which generally is not the case, the blood condition correcting itself, as a rule, within a short time. With us a count of the red cells is of very little value, for upon coming to a high altitude there is such a rush of immature red cells to the periphery that the erythrocyte count is very misleading. I have often seen a count of 7,000,000 to 10,000,000 red cells in a patient who presented unmistakable clinical signs of anemia. Mixed infection is almost always accompanied by anemia, and in such cases iron should be given from the start.

Under present conditions at St. Joseph's, it seems wrong to send us patients who cannot afford to remain under institutional care at least six months, and, if possible, able to stay a year if it seems necessary, if not all the time in the institution, at least under our direction. Our experience is that six months' institutional treatment usually suffices to place a patient on the safe side, so that with a little help now and then he may be trusted to look after himself, after spending the period mentioned under our immediate direction. In advanced cases especially, the patient should be warned that a great deal of time is necessary to accomplish a good result, and then when month after month passes and still a long period of invalidism is ahead, disappointment will not be so general nor so keen. It is very foolish, I am sure, to put a time limit upon tuberculosis, and when done often leads to such grave disappointment as seriously to handicap the patient in the struggle for health.

In examining the stastistics of any institution in the arid region it is important to keep in mind the fact that a large proportion of the cases belong to an advanced class, those in which the patient has been sent West only as a last resort. To my mind, the small percentage of incipient cases explains the comparatively great length of time treatment must be continued in order to get clinical cures, as well as their comparative rarity in institutional work out West.

One hundred patients have been admitted and discharged from the date of the establishment of St. Joseph's Sanatorium to the present time. Of these, 25 were discharged or died during the first month, and therefore will not be included in our statistics. They were all hopeless cases, and with the exception of those who died were all sent home as soon as possible. For the sake of perfect fairness five cases in which the bacillus could not be demonstrated have also been omitted, even though in all the patients made good recoveries. As we employ it, the term "clinical cure" means a normal general condition and temperature, freedom from signs of activity in the lesion, absence of bacilli in the sputum, and practical absence of cough and expectoration. Deducting the 25 cases under treatment less than a month, and the five in which the diagnosis could not be confirmed, leaves 70 cases to be considered in this report. In 12 or 17 per cent., a laryngeal lesion was present. In five of these or 42 per cent., the laryngeal lesion was cured. In three or 25 per cent., there was improvement, and in four or 33 per cent., we failed to control the laryngeal complication. Even though the number of our laryngeal cases has been very small the results

have been more than good. I have come to feel a certain sense of power in laryngeal tuberculosis, based upon results at Fort Bayard as well as at St. Joseph's Sanatorium, especially when there is absence of ulceration.

For the purpose of elucidating our results I have utilized both the old classification of three stages, and one of my own devising, and based upon the degree of mixed infection present, as indicated by the temperature, though, of course, not without a due sense of the deficiencies in our knowledge of the allied infections of tuberculosis. It, however, requires but little experience with pulmonary tuberculosis to recognize that prognosis depends very largely upon the degree of fever present, or what amounts to the same thing practically, the extent and gravity of the mixed infection. The size of the lesion and its character is of relative insignificance, and I have, therefore, also divided the cases into those with little or no mixed infection, and those with well-marked clinical mixed infection. Regardless of classification the general results are as follows: Three, or four per cent., died; 12, or 17 per cent., were unimproved; 38, or 54 per cent., were improved, and these, one should bear in mind, were nearly all potentially curable cases if treatment could have been continued long enough, and 17, or 24 per cent., were clinically cured.

In 25 cases there was infiltration alone, and of these one, or four per cent died; two, or eight per cent., were unimproved; 12, or 48 per cent., were improved, and 10, or 40 per cent. were clinically cured.

In 21 cases there was consolidation, and of these, one, or five per cent., died; one, or five per cent., were unimproved; 14, or 66 per cent., were improved, and five, or 24 per cent., were clinically cured.

In 24 cases cavities were present, and of these, one, or 4 per cent., died; nine, or 37 per cent., were unimproved; 13, or 54 per cent., were improved, and one, or four per cent was clinically cured.

It is thus plainly seen that the majority of our cases belong to the advanced and far advanced classes.

Fifty-seven cases were classed as pure tuberculosis, or minor degrees of mixed infection. Of these, one, or two per cent., died; five, or nine per cent., were unimproved; 36, or 63 per cent., were improved, and 15, or 26 per cent., were clinically cured.

Thirteen were cases of marked mixed infection, with an average daily maximum temperature of 100 or over. Of these, two, or 15 per cent., died; seven, or 54 per cent., were unimproved; three, or 23 per cent., were improved, and one, or eight per cent., were clinically cured. This exemplifies what I have tried to make clear in previous papers, that climate, like everything else, is practically powerless in severe mixed infection. It is yet too early to estimate the effect in this class of cases of a potent streptococcic serum, but that it will not be great I feel quite sure, for it must indeed be a wonderful serum that will meet the exceedingly varied infections of pulmonary tuberculosis.

In eight, or nine per cent. of our patients a complication occurred, such as a bronchopneumonia following hemorrhage, or an acute miliary tuberculosis, which either caused immediate death or ruined the prospect of cure. In the one case in which pneumothorax occurred, the patient, after two years, is still living. The total gain of weight in 70 patients was 1,035 pounds, an average of 14 pounds each. Three patients relapsed after apparent cure, though one of these subsequently recovered. Marked indiscretion accounts for these relapses, and the same is true of nine patients who relapsed after improvement. The cases were under observation an average of 7.6 months, and an average of 5.1 months in the institution.

One cannot, of course, form an opinion of the value of climate in phthisiotherapy from so short a series of cases as those described in this report, but based upon my experience at Fort Bayard and elsewhere, as well as at St. Joseph's, I have certain opinions on this subject, which, it seems to me, worth while to state. There is, of course, nothing actually specific in climatic treatment, but that there is something inhibitory to the progress of pulmonary tuberculosis in high, dry climates I do not for a moment doubt. Following the change from home conditions, climatic and otherwise, to an entirely new environment, there is such a stimulation of metabolism that the patient is often at once started upon the road to recovery. No one, I think, will care to maintain that it is not easier to practice phthisiotherapy under climatic conditions which permit us to keep patients out of doors all the year round in comfort, and that without any special provision for the purpose or urging of the patient. In high altitudes there is a relative immunity from hemorrhage, not altogether accounted for by the quiet life. An environment which from a hygienic viewpoint is ideal, eliminates to a marked extent the intercurrent affections which so often play havoc with the consumptive. The symptomatology is all modified for the better, as evidenced by lower temperatures, absence of night sweats, chills, and diarrhea. At the present time at least proper treatment in an ideal climate is the privilege of the comparatively well-to-do. A great injustice is done to poor people by sending them far from home. Nothing is to be expected from climatic treatment in cases presenting severe mixed infection, and it is always wrong to send the acutely ill upon a long journey. Certain cases, impossible to differentiate before-hand as a rule, are not adapted to high, dry, climates. Marked cyanosis and myocardial degenerations I consider the only well-established contra-indications.

To give climate in phthisiotherapy its proper place is the special mission of our institution, and how well we fulfil our purpose will depend largely

upon the support given us by the profession. St. Joseph's will never be entirely satisfactory, either to those in immediate charge, nor to the members of the Advisory Board, until the support given us is sufficient to render us entirely independent, especially of the whims or caprices of patients. We have managed to keep the institution open and do our work for nearly three years with the small number of patients stated above, and the struggle we have made and are still making in the interests of the consumptive and of medical science entitles us, it seems to me, to a hearty cooperation from the profession at large.

FEIGNED INSANITY: MALINGERY REVEALED BY THE USE OF ETHER.[1]

BY CHARLES G. WAGNER, M.D.,
OF BINGHAMTON, N. Y.;
SUPERINTENDENT OF THE BINGHAMTON STATE HOSPITAL.

ON the morning of January 14, 1902, William H. Ennis, thirty-two years of age, a police officer in the Borough of Brooklyn, city of New York, killed his wife, Mary A. Ennis, by shooting her with a revolver. He then went to a small hotel in the neighborhood, engaged a room, went to bed and was soon asleep. An hour or two later he was arrested and lodged in jail. He was indicted by the Grand Jury for murder in the first degree, was tried in May following, convicted of the crime as charged and sentenced to death during the week beginning July 7, 1902. His case was appealed but the sentence was affirmed and December 14, 1903, was finally designated as the date of execution.

During the trial it was shown that Ennis had been a police officer for eight or nine years; that he was a hard drinker and possessed a bad temper; that he was married in November, 1900, and had boarded with his wife's mother for about four years prior to his marriage; that after his marriage he frequently came home intoxicated and was abusive in language and conduct toward his wife who finally, with her three weeks old baby, left him about four months before the commission of the crime and obtained a legal separation. A large amount of expert medical testimony was offered by the defense in the attempt to show that the accused was suffering from paranoia; that he was delusional, epileptic and demented, and that he was unable to walk on account of lateral spinal sclerosis, all of which conditions were declared absolutely incurable. Other testimony by well-known experts was offered by the prosecution to show that the accused was feigning. In court Ennis was incoherent and answered questions irrelevantly or not at all. He appeared unable to walk without assistance or to stand erect with his feet squarely on the floor. At each step as he rested his weight to some extent on the ball of his foot, a violent coarse tremor agitated the entire leg. These abnormal mental and physical phenomena Ennis exhibited throughout his trial and after conviction, on the way to the state prison at Sing Sing, N. Y., where he was confined until his execution.

From the testimony of the prison physician at Sing Sing, the warden of the prison and the keepers who came in daily contact with Ennis, it appears that throughout the following eighteen months he manifested little if any interest in his surroundings or in outside matters; rarely asked questions and when spoken to usually replied incoherently or not at all. His expression and manner impressed the prison officials as indicating dementia or imbecility, although they were somewhat suspicious that he might be feigning.

During the entire period of his incarceration Ennis was never observed standing or walking without assistance; at all times he appeared to be unable to sustain his weight with his feet squarely on the floor, but when supported on each side he could walk or drag himself along on the balls of his feet, and while doing so his legs were invariably violently agitated by the coarse tremor previously referred to. As the time for execution approached the warden of the prison, being in doubt as to Ennis' mental condition, requested the Governor to appoint a commission to examine him. Governor Odell appointed as such commission Dr. George A. Smith, medical superintendent of the Manhattan State Hospital at Central Islip, N. Y., Dr. Daniel H. Arthur, medical superintendent of the Gowanda State Hospital at Gowanda, N. Y., and the writer.

On December 1, 1903, the commission met at the prison and after careful study of the records of the case examined Ennis. The prisoner was brought from his cell by two keepers to the office of Principal Keeper Connaughton. As he entered the office he was in great agitation. His legs, and to a less degree both arms, trembled violently. He appeared unable to walk, but apparently tried to put his feet forward step by step as the officers supported him into the room. Apparently when he bore but little weight on the balls of his feet the muscular tremor of his legs became so great that he would have fallen if he had not been supported. He appeared unable to straighten his legs so as to bring his heels to the floor. When seated in a chair the tremor subsided and his mental agitation became less pronounced. The expression of his countenance was idiotic or imbecile and he appeared not to know where he was or to realize the nature of the questions that were put to him. When asked his name he made no response until the question was repeated many times, and then only when spoken to sharply, he said, "Ennis." When asked his first name, after considerable delay he said, "William." After being asked many times how old he was, he said "thirty-five," which was not correct, his age being thirty-three years. No further answers could be drawn from him during the examina-

1 Read at the annual meeting of the American Medico-Psychological Association, held at St. Louis, Mo., in June, 1904.

tion, but when asked if he had ever received any injury to his head, he nodded quickly in the affirmative and pointed to a spot on his head where an old scar was visible. When asked why he trembled he made no reply, but to the question "Are you afraid?" he immediately laughed and shook his head, as if desirous of conveying the idea that the tremor was due to disease and not to fear.

Ennis frequently laughed during the interview in an imbecile manner and almost continuously moved his lips as if whispering to himself, but no sound of speech could be heard. He continually looked about the room with a vacant stare. At the close of the examination, when removed from the office to his cell he dragged his feet in the same manner as when entering, and exhibited the same tremor of legs and arms.

On December 3, two days later, Dr. Smith, Dr. Arthur, and the writer again visited the prison and saw Ennis. He was brought into the office by two keepers. His countenance wore the same imbecile expression and his gait was unchanged, but when questioned he manifested slightly increased intelligence. He gave his name more promptly and when asked about the injury to his head, he immediately raised his hand to the vicinity of the scar and said "Doctors did that." When asked where he was, he replied, "In a hospital," and said that Doctors brought him there. He did not seem to realize that he was in prison, that he had committed a homicide, or that he had ever had a wife. His hearing was tested and found good. His pupils reacted promptly to light and distance. Reflexes were normal except the knee-jerk which was slightly increased. When shown different colored worsteds, he called red black and yellow red, but a few moments later when shown yellow again he appeared unable to say what color it was. When tested as to the taste he answered promptly and correctly when given sugar, but shook his head when asked to tell what salt, acetic acid, and bromide solutions tasted like. A variety of other tests were made and although Ennis showed somewhat more intelligence than on our first visit, he would not admit any knowledge of his crime. The examination lasted nearly two hours, after which Ennis was returned to his cell, two keepers supported him on his way to the elevator, and the same tremor of his legs was observed as when he was brought in. At this time the prison physician stated that, while visiting Ennis in his cell, he had asked him why he did not answer our questions, to which he replied that he did not know who we were and so he was not going to talk to us.

The results of our examination had thus far been to a considerable extent negative and, therefore, unsatisfactory. But owing to the contradictory character of the testimony at the trial and the irregularity of the alleged symptoms during his imprisonment, the commission were all of the opinion that Ennis was malingering, notwithstanding the absence of conclusive proof to sustain their convictions. It then occurred to the writer that an anesthetic might be of use in obtaining the desired evidence—the idea being that, if Ennis were malingering, the fact would become patent when all voluntary and purposeful action should be in abeyance. Accordingly, the commission met at the prison, December 8, for the third time. The prisoner was again examined. His expression of countenance, manner, gait and general appearance were unchanged. He was taken to the hospital operating room, placed upon the table and ether administered. He made no resistance and although his breathing was observed to be shallow he was soon apparently quite unconscious, but when taken from the table and with the assistance of two keepers made to walk he quickly revived and exhibited the same phenomena of gait, and the same expression of countenance as at the previous examinations.

In a few minutes he was again placed upon the table and ether administered until his muscular system appeared relaxed and consciousness was again apparently gone, but on being brought to his feet, although it was evident his mental faculties were somewhat clouded, his gait and countenance were unchanged. After a short delay Ennis was placed on the table for the third time. He made considerable resistance and declared he would not "take any more of that stuff," referring to the ether. Resistance was overcome and the ether administered until complete unconsciousness and thorough muscular relaxation were obtained. Just before this degree of anesthetization was reached Ennis became talkative, profane, and abusive; his voice was loud and strong, and his language coherent, forcible and expressive; whereas, previously he had talked but little and always in a low tone. While still profoundly unconscious he was lifted from the table and stood upon his feet. As consciousness began to return, with a little assistance he walked across the room without difficulty or muscular tremor, and at each step placed his foot squarely upon the floor. He walked out into the corridor to the elevator and on reaching the ground floor walked to his cell without assistance. The plea of lateral spinal sclerosis was thus disposed of.

The change in the character of Ennis' speech during anesthetization, his coherent, loud, profane language, which was evidently a near approach to his normal expression, and the elimination of the alleged spinal disease satisfied the commission that the pretense of insanity was without foundation and report was made to the Governor accordingly.

On the day following the last examination Ennis was visited by the prison physician, but he would not talk beyond saying that he was sick and wanted to sleep. The next morning, however, he was very communicative. When he

saw the prison physician approaching he immediately called out, "I had all you fellows guessing all right and you never would have caught me only for the ether." He said he had been "under an awful strain for a year and a half" and that he would "rather go to the chair than go through the same experience again." He talked freely about the murder and put the blame for the crime on his wife's mother. He talked intelligently about his whole life, admitted the crime and had no hope of escaping the electric chair. He said that no physician or lawyer had posted him on how to act or walk, but that one day while standing at his cell door, before his trial and after the alcohol was pretty well eliminated from his system, his legs trembled so much that he could not stand and keep them quiet. This trembling suggested the idea, and all that he had to do, he said, was to exaggerate the the shake somewhat and put on a "few fine touches."

The prison physician stated in a letter to the writer after the execution that Ennis proved to be quite a sensible fellow in his conversation, and that he went to the chair without showing any fear.

A NEW CASE OF CHLOROMA WITH LEUCEMIA, WITH A STUDY OF CASES REPORTED SINCE 1893.

BY GEORGE DOCK, M.D.,
AND
ALDRED SCOTT WARTHIN, M.D.,
OF ANN ARBOR, MICH.

INTRODUCTORY AND CLINICAL BY DR. DOCK.

In 1893[1] I reported a case of chloroma with an analysis of the cases then known. Including my own case there were only seventeen, but I felt justified in giving a clinical picture of the disease, and in assigning it an anatomical basis. The chief clinical features were: "The appearance, usually before the age of twenty, of anemia without evident cause, with loss of strength, dyspnea, and emaciation; hemorrhages in skin, mucous membranes (epistaxis), or internal organs (retina); rapid pulse; ocular symptoms, such as difficulty of vision, strabismus, and especially exophthalmus, without the special features of Basedow's disease and with tumor in the orbit; deafness and ringing in the ears, and tumors in the temporal regions, or in the cranium in other parts, or in other parts of the body." Besides the resemblance of the symptom-picture to that of many cases of leucemia, especially acute leucemia, three out of nine cases of chloroma, observed since leucemia was known, showed "an increase of the leucocytes, two of them an increase such as is seen usually only in leucemia." At that time leucemia was not so well known as it is now, and I felt obliged to devote considerable space to a consideration of the histology of the blood. I also discussed the position of the anatomical change in chloroma and concluded that it might better be termed lymphoma (in the sense originally used by Virchow, who gave leucemia as the first example of the lymphomatous disease) than sarcoma, lymphosarcoma, or lymphadenoma. An interesting feature of the morbid anatomy of chloroma was shown by my analysis, as it had been by some earlier writers—the "predilection of the periosteum, especially that of the head, but also fibrous tissue in general."

This article served to call renewed attention to the subject. Since then more than twenty cases have been reported, some of them with elaborate studies, though without demonstrating any essential changes in the clinical and anatomical conceptions of the disease. Recently I was fortunate enough to have another case. Like many others it could not be investigated as thoroughly as it deserved, but I have thought it might well serve as the basis of an analysis of the cases reported since my former paper was published. The anatomical study of the case has been made by my friend and colleague, Dr. A. S. Warthin, whose investigations in the anatomy and pathology of the blood-forming organs have already been so valuable.

Clinical Summary of the Case.—Weakness, anemia, headache, tinnitus, deafness, of one year's duration; loose teeth; emaciation; leucemic changes in blood; death from asthenia. L. J., aged forty-five years, farmer, Swede, admitted to the Medical Clinic, Hospital of the University of Michigan, December 1, 1903, on account of weakness and anemia. His father died at sixty-one years of age, from an acute illness; his mother died at eighty-two, of a disease characterized by difficult breathing. Patient has been married twice; has had two healthy children by each marriage. Patient was strong as a child. He had measles at six years; since then has never required a physician until the present illness. Denies venereal diseases. Was a farmer in early life; then worked in the woods and in lumber mills from 1883 to 1891; then resumed farming. He formerly used alcohol in excess; has taken none in the last year, and has also given up tobacco in the last year.

The present disease began in November, 1902, with a feeling of fatigue and dyspnea on exertion. Treatment was without benefit. For six weeks the patient was confined to bed by weakness; "his pulse could hardly be felt." In the early part of the disease he complained of pain in the left side of the head. Hearing was gradually lost, while a pounding noise, like that of a railroad train, was present. Also in the early stage the teeth became loose, without salivation or other local symptom. A change in the color of the skin was noted in the very beginning. There has been a gradual loss of weight, amounting now to twenty-five pounds. The appetite is fairly good; bowels constipated. The patient sleeps well. He complains of dyspnea only on exertion, but says he is very weak.

1 Chloroma and its Relation to Leucemia, The American Journal of the Medical Sciences, August, 1893.

Status Presens, December 2, 1903.—Man of large frame; muscles small and soft; panniculus thin. In the right axilla are three enlarged glands, the largest the size of a white bean; no other superficial glands enlarged. The expression is weary and apathetic. Deafness and seeming lack of intelligence render the examination difficult. The face is pale and sallow; the skin over the body very pale, but not sallow; over the legs and arms sallow. On the abdomen, just below the right costal margin, is a pale brownish pigmentation. There is a dark-brown line in the skin extending from the tip of the ensiform to the pubes, and an irregular brownish patch in the right lumbar region, but no pigmentation in other parts of the body. The skin in general is smooth, dry, and elastic. Over the right shoulder is a mass the size of a large orange, firm, elastic, movable under the skin, but fixed below. A smaller, softer, bilobed mass occupies a similar position on the left shoulder (lipomata?). There is no edema. The skull shows no abnormality except two scars on the left malar and left frontal regions respectively from injuries. The sclerae are very pale; pupils equal and react well. The lips are pale; there is marked *fetor ex ore;* tongue dry, pale, with thin gray coat, fissured and marked by teeth. The teeth are worn, but only a few are missing. The gums are red, slightly swollen, their edges covered with a grayish-green deposit extending from the teeth, removable by rubbing. Pharynx negative. Auscultation and percussion of lungs negative. Apex beat in the fifth intercostal space, nipple line. Dulness not enlarged. Sounds are clear, except the first in the pulmonary area, which is replaced by a long, loud, blowing murmur. Radial artery not thick nor tortuous. Pulse of moderate size, quick. Blood pressure (Riva-Rocci) 133 mm. The abdomen is below the level of the ribs; inspection and palpation negative. The spleen cannot be felt. There is marked pain on pressure over sternum and tibiæ.

Urine. No albumin or sugar; few leucocytes; many cylindroids. Owing to the patient's lack of intelligence and his unexpected death the urine examination was not complete. Albumose tests not made.

Blood. Pale and watery; fresh drop shows few red cells, varying in size and shape; leucocytes increased. Red blood corpuscles 509,600, leucocytes 35,669, hemoglobin 15 per cent. For differential count see below.

December 5. Examination of stool (Dr. Dock); large and formed; good digestion; no blood, pus, or mucus; no protozoa or ova. Three test breakfasts were given (one Boas') and examined. All showed absence of acid, slight excess of mucus, little or no peptic digestion (Mett.). The temperature ranged between 98° and 102.5° F., pulse 94 to 108, respiration 18 to 26.

December 8. Became restless in the night. Skin cold; delirium; refused nourishment, temperature, 96° F.; pulse, 100; respiration, 28.

Ophthalmoscopic Examination (Dr. Carrow).—Numerous hemorrhages in both retinæ; vision much impaired.

Subcutaneous injection of physiologic salt solution at 10:37 to 10:50 A.M., 12 ounces. Riva-Rocci 108 at beginning, 100 at end. Pulse weaker. Died 11:28 A.M.

The blood was stained with hematoxylin and eosin, Ehrlich's triacid, and Wright's stains.

EXAMINATION OF THE BLOOD. DIFFERENTIAL COUNTS.

Date.	Red blood cells.	Leucocytes.	Hemoglobin.	Normoblasts.	Megaloblasts, degenerated.	Free nuclei.	Small lympho cytes.	Large lympho cytes.	Lymphocytes, marrow.	Polynuclear.	Eosinophile, polynuclear.	Eosinophile, mononuclear.	Myelocytes.	Transition and mononuclear.	Basophile.
December 3	509,600	35,669	15	...	1	...	6.7	3.9	79.9	7.4	0.8	...	0.4	...	...
December 4	.....	.....	...	...	...	1.8	6.9	5.3	79.6	5.7	0.3	0.1	0.2	...	...
December 6	.....	.....	...	1	...	...	5.8	5.0	82.6	5.6	0.2	...	0.1	0.5	...
December 8	820,000	.....	15	1	...	...	2.5	2.3	81.6	7.4	2.0	0.2	1.9	1.3	0.4

The counts given are all taken from Wright's stains, which correspond closely to the hematoxylin and eosin counts. The triacid was used only to confirm the neutrophile myelocytes. The blood shows very few nucleated red cells, almost all normoblasts. The only megaloblasts found had degenerated nuclei.

In all the preparations of one day, December 4, there are many "free nuclei," up to 18 per 1000 leucocytes. At other times these are too few to count. They are very small, stain intensely, and show no protoplasm. The small lymphocytes are unusually typical, but some of them show slight fragmentation of the nucleus. There is a small proportion of typical large lymphocytes, some of which also show fragmentation of the nucleus. These two groups together are only slightly increased above normal.

From 79.6 to 82.6 per cent. of all the leucocytes differ from typical lymphocytes, but resemble these cells in certain respects, and differ still more from other normal leucocytes. They closely resemble the undifferentiated lymphocytes of the bone-marrow, and for convenience I class them in the table "marrow lymphocytes." They

range from the diameter of a red blood corpuscle to two or more times that size. They are often oval or even broadly spindle shaped. Many of them have no visible protoplasm. Others show a narrow, crescentic, or annular rim, and still others a wider protoplasm up to an amount usual in large mononuclear cells of normal blood. In most cells of this class the nucleus is round or oval, almost or quite filling the cell. In some the nuclei are reniform, or more or less incised on one side, or sometimes bilobed. Sometimes the two lobes partly overlap; sometimes they are partly or quite separated. When there are two nuclei these are sometimes unequal. The nuclei stain moderately well with hematoxylin and methylene blue; faintly with triacid. They look unevenly blurred in many cases, but in general stain like the nuclei of large lymphocytes, and marked failure to take the stain and other evidences of degeneration, so often seen in leucemic blood, are unusual. The protoplasm usually takes a blue with Wright's stain, sometimes darker than the nucleus, without granulation, but often with a spongy or reticulated appearance. Triacid stains it a pale pink or not at all. Eosin can be almost entirely washed out, but sometimes leaves a pale pink, and in some cells stained with hematoxylin and eosin the protoplasm of these cells has a pale blue tint. The protoplasm is sometimes ragged at the edges; sometimes there are few or many knob-like processes on the edges, stained a pale blue, and having a smooth, homogenous appearance. These cells cannot be separated readily from those classed large mononuclear, so far as general appearance is concerned. The distinction here is based upon the different appearance of the protoplasm and the relatively smaller and more distinct nuclei in the large mononuclears. While those classed as marrow lymphocytes, as well as the large mononuclears, have no granulations in the protoplasms, there are a few cells having the general shape and proportions of large mononuclears that show a few eosinophile granulations, sometimes very small ones, scattered over a pale and sometimes vacuolated protoplasm.

The polynuclear cells vary much in size, nuclear structure, and protoplasm, resembling in their polymorphism the polynuclears of mixed-celled leucemia. In size they vary from one to four times the diameter of a red blood cell. The nucleus is sometimes in separate parts, especially in the larger cells. The nuclei stain deeply as a rule, but the large ones show a reticulated structure with thickening at the nodal points. The protoplasm shows, with proper stains, a fine, or in rare cases somewhat coarse, acidophile or neutrophile granulation. A few of the smaller cells of this group are probably Ehrlich's pseudo-lymphocytes.

The polynuclear eosinophiles, relatively rather low, but absolutely within normal limits, show no marked abnormalities in size or structure. Many have nuclei less polymorphous than in normal blood, but still within the range of variation in such cells in general.

Mononuclear eosinophiles were present only two days out of four in small proportion. Most of them are large, but some are about the size of red blood corpuscles. In some the protoplasm is very narrow. I have counted among the eosinophile cells some that have very few granules, as mentioned above. In one cell, not included in any of the counts, a "marrow lymphocyte" without protoplasm, there were ten large eosinophile granules scattered over the cell without any explanation by way of artefact.

The myelocytes (neutrophile) vary in the usual manner from small to large. Some of them have vacuoles in the protoplasm.

Basophiles appeared only on the last day. They all have round or elliptic, excentric nuclei. Some are small, some large.

The red blood corpuscles show slight changes, aside from their very scanty number. The cells vary somewhat in size, but marked departures in size and shape are not present. The cells take the usual stains well; they show very little polychromatophilia. Normoblasts are few. No typical megaloblasts are to be found, but some of the large nucleated red corpuscles have trefoil or irregular nuclei.

During the patient's lifetime the full details of the blood were not known, but I had carried the examinations far enough to show that while the blood resembled in general that in many cases of acute leucemia it had some important differences in the details of the cells as well as in the differential count. It was more polymorphous than is usual in acute lymphocythemia, and resembled somewhat closely the blood of a case of acute lymphocythemia with extensive intestinal lesions that I had studied a short time before, and a report of which will be made by Dr. Warthin.

The diagnosis, as made at a clinical conference December 4, was: acute leucemia, possibly lymphocythemia, in the late stage of a severe anemia of unknown cause. The points of resemblance, and of difference as compared with pernicious anemia with late lymphocytosis, were brought out. Chloroma did not then seem as probable as acute lymphocythemia with lesions in the alimentary tract, but before the autopsy, on account of the absence of distinct gastrointestinal symptoms while under observations, I thought chloroma was more probable, notwithstanding the absence of the peculiar head symptoms.

Permission to make an autopsy was obtained with great difficulty and after much loss of time. It was impossible to examine the head, and owing to lack of time the examination of the other bones was seriously limited.

Autopsy protocol. December 9, 1903, 10 A.M. (Dr. Warthin.) Body well built. No deformities or anomalies. Length 160 cm. Abdomen on level of ribs. Left side of thorax not as full as right. Musculature fair; muscles in fair con-

dition. Rigor mortis marked, present throughout. Panniculus moderate. Slight edema over ankles. Body heat entirely absent. No signs of decomposition.

Skin is very pale on the whole. There is pale red hypostasis over the back. The flexor surfaces of both upper and lower extremities show no unusual pigmentation. Over the upper portion of the right thigh there is an area about the size of a hand showing scattered spots of pale-brownish pigmentation. In the median line of the abdomen there is a pale linea fusca. The wrists and back of hands are tanned. Over the inner side of the right elbow there is a small ecchymosis, and numerous small petechial hemorrhages are scattered over the flexor surfaces of both upper and lower extremities being most marked over the left arm and less numerous over the lower extremities. Transfusion mark in right pectoral region. The hair is thin over the vertex, and harsh and dry. The beard is slightly gray. The teeth are in fair condition.

Over the outer third of the left clavicle there is a subcutaneous tumor 7 cm. long by 5 cm. wide. It is slightly lobulated and at its lower pole there is a smaller mass 2 cm. in diameter. The tumor is freely movable, is not adherent to the skin, is semielastic. Over the outer third of the right clavicle there is a similar roundish tumor 7 cm. long by 6 cm. wide. It is firmer in consistency and is less freely movable than the growth on the left. It is not adherent to the skin and does not seem to be attached to the periosteum. It does not move with the arm. Both tumors present the characteristic of lipomata.

The axillary glands are palpable, but not enlarged. Cervical glands not enlarged. The inguinal glands are just palpable, not enlarged.

The head was not opened. (No permission.)

On section the muscles are pale brownish-red; panniculus a pale lemon-yellow.

The diaphragm is at the fourth intercostal space on the right, and at the fifth rib on the left. The first costal cartilages are ossified.

On removing the sternum its inner surface is found to be covered with a dense infiltration about 1 cm. thick and having a distinct light grass-green color. The infiltration is most marked over the upper part of the sternum and here the color is more decidedly greenish. The sternum is softer and more friable than normal, and is easily fractured or cut. The sternal marrow is hyperplastic, pyoid in character, and has a slight greenish tinge. Exposure to the air and slight drying caused the green color of both the infiltration and marrow to become more marked.

The mediastinal fat is of fair amount, and of a pale lemon-yellow color. Contains a few small pale lymph nodes. In the thymus fat there are several large lymphoid structures, one of which is about the size of an English walnut and has a greenish-gray color. On section it is very edematous, medullary in consistency, greenish-gray, and showing fine lines of anthracosis. The other lymphoid structures in this region are soft, grayish, edematous, and more or less anthracosed.

The apex of the heart lies in the fifth intercostal space half-way between the left paresternal and nipple lines. The heart extends four finger-breadths to the right of the median line. No fluid in either pleural sac.

The pericardium is distended. Contains 40 c.c. of clear fluid, the increased intrapericardial tension being due to dilatation of the heart.

The heart is much enlarged, the enlargement being due chiefly to dilatation of the auricles. Weighs about 700 grams. On the anterior wall of the right ventricle there is a large, triangular, tendinous spot measuring 5 x 5 x 4 cm. Near the apex of the left ventricle there is a smaller one measuring 2 x 1 cm. Smaller ones on the posterior wall of the right ventricle. The subepicardial fat is increased in amount and is of a pale lemon-yellow color, translucent, and edematous. Everywhere over the surface of the heart along the course of the smaller vessels there are great numbers of small, punctate hemorrhages. They are most numerous on the posterior wall near the apex. Coronary veins greatly distended. The auricles contain pale plum-colored blood and large white clots. The walls of both ventricles are lined with similar white clots. The mitral and tricuspid orifices are dilated. The heart muscle is pale and soft.

The left lung weighs 1,000 grams and measures 28 x 18 x 6. Pleura adherent posteriorly and over base by old and rather tough adhesions. The lung is voluminous, pale grayish-pink above, and moderately hypostatic posteriorly. On section it is very edematous, yielding an abundant foamy exudate on slight pressure. Very small, whitish, airless areas throughout. Anthracosis moderate.

The right lung weighs 1,120 grams and measures 30 x 18 x 6. Adherent posteriorly and over the base by very firm adhesions. Pleura covered with the remains of old adhesions. Lung very voluminous. Color similar to that of left lung. Consistency somewhat more firm than that of left lung and the cut surface is darker in color, otherwise similar. The small, whitish, airless areas are more numerous in lower lobe.

The pulmonary veins contain large pale clots. The mucosa of the larger bronchi is pale, that of the smaller is injected. The smaller bronchi are somewhat dilated. The bronchial glands are enlarged, very pale gray, soft, and edematous. Thoracic duct negative. Thoracic and cervical esophagus negative.

No pathological changes in mouth and throat so far as could be ascertained (section not permitted). Neck organs examined from below. No pathological changes found.

No fluid in the peritoneal cavity. The omentum is rolled up; moderately rich in fat of a very pale yellow color. The lower border of the stomach extends one finger-breadth below the umbilicus. The lower edge of the liver in the median

line is four finger-breadths below the ensiform and one finger-breadth below the edge of the ribs in the right nipple line. The pylorus is four finger-breadths to the right of the median line. The colon is contracted, filled with hard, fecal masses. The duodenum is moderately dilated; the remaining portion of the small intestine is collapsed. The appendix is very long and large, the distal one-third dilated. The greater part of the appendix lies in the pelvis and is attached to the sigmoid flexure by recent adhesions, which are very vascular. The peritoneum about the appendix is thickened. No evidences of any perforation, old or recent.

The spleen weighs 426 grams and measures 17 x 11½ x 5 cm. It is rather soft and flattens on pressure. The capsule is slightly thickened and over it there are scattered small hyaline tags. There are four distinct notches on the anterior border. On section the pulp is pale red, soft, swells up above the stroma, and is easily scraped away. The stroma is covered up by the hyperplastic pulp. The follicles are very few and small, and can be seen only in a few places near the capsule. The cut surface presents a moderately shagreened appearance and is of a uniform pale red.

The left adrenal is very small, completely surrounded by pale-yellow fat. On section it shows no change. The right adrenal is likewise very small and embedded in a thick capsule of pale fat. On section shows post-mortem change of the medulla, otherwise negative.

The left kidney has a very thick fatty capsule of a pale lemon-yellow. The fibrous capsule is stripped with some difficulty. The organ freed from its capsules weighs 190 grams and measures 14 x 6½ x 3½ cm. The cortical surface is very pale and slightly granular. Traces of the fetal lobulations are present. The cut surface is very pale and cloudy. The outlines between the labyrinths and medullary rays are not distinct. The consistency is somewhat diminished. The pelvis presents no pathologic changes. The subpelvic fat is very abundant.

The fat and fibrous capsules of the right kidney are similar to those of the left. The stripped kidney weighs 190 grams and measures 17½ x 7 x 3 cm. The organ contains more blood than the left, the outlines between the medullary rays and the labyrinths being more distinct. Scattered over the cortical surface are small, slightly elevated, pale yellowish or grayish spots about 2 mm. in diameter. On section these spots are nearly round and are located for the greater part just beneath the cortical surface. They are fairly firm and are not affected by pressure. When scraped with the point of the knife they yield an abundance of cells. In other respects the appearances resemble those seen in the left kidney.

The ureters are dilated and filled with slightly turbid urine. The bladder is greatly distended and filled with slightly turbid urine. Its wall is thin, and the mucosa very pale. No other changes.

(The stomach was ligatured at the cardiac orifice and removed in connection with the intestines, which were ligatured at the rectum. The contents were preserved for chemical examination.) The stomach is dilated, its wall thin, and the mucosa very pale. Lymphoid follicles prominent. In the submucosa of the fundus there is a small round tumor about the size of a pigeon's egg. The mucosa is intact over the growth, which has a firm consistency.

The intestines are very pale. The lymphoid structures are rather prominent, but not distinctly enlarged.

The liver weighs 2,230 grams; its greatest measurements are 29 x 20 x 11 cm. The general color of the organ is a light yellowish-brown. Over the surface and just beneath the capsule there are many small, yellowish or whitish spots. On section these spots extend a short distance into the liver substance, so that they appear as round or oval areas about 2 to 4 mm. in diameter. They are sharply circumscribed, fairly firm, but yield an abundance of cells on scraping with the point of the knife. Besides these small spots there are seen underneath the capsule larger pale areas, less sharply circumscribed, and of a more reddish-yellow color. On section these areas also extend into the liver and appear to be made up of groups of liver lobules that have suffered some parenchymatous change. On the main section a narrow strip of liver lobules showing characteristic nutmeg appearance is found just beneath the capsule. The remaining portion of the organ is very anemic, the central veins empty, and the lobules small and of a light chocolate color. Similar small, yellowish areas to those seen underneath the capsule are scattered over the surface.

The gall-bladder is adherent to the omentum. It is moderately filled with dark greenish-brown bile. No stones or sand. Bile passages patent. Examination of portal vein is negative.

The pancreas is about normal size, very pale, and somewhat softer than normal. Section negative.

The mesenteric lymph glands are slightly enlarged, pale and soft. The lymph glands of the portal fissure are very large, pale, soft, and homogeneous on section. The retroperitoneal glands are moderately enlarged, very pale, and of medullary consistency. The hemolymph nodes are pale, but present no other gross changes. No greenish color seen in any of the abdominal or retroperitoneal lymph glands.

The examination of the sexual organs, internal and external, is entirely negative.

On stripping back the prevertebral tissues the bodies of the vertebræ are found to be covered with flattened greenish masses varying from 4 to 10 mm. in thickness. Over the intervertebral disks the greenish color barely shows, so that the greenish vertebræ are sharply outlined from each other by the whitish disks. In the lumbar region the color is most marked over the bodies, but in the thoracic region the greenish tissue is more

marked along the sides of the vertebræ. The greenish tissue extends for a short distance over the ribs. It also infiltrates to some extent the prevertebral fat-tissue. A thin layer of the greenish tissue is found in both iliac fossæ and over the inner side of the sacrum. It is not present on the clavicles or on the long bones of the lower extremities. The bodies of the vertebræ are very soft and are easily cut with the cartilage knife. The marrow spaces are increased in size and the bony trabeculæ greatly rarefied. The red marrow is entirely replaced by a grayish pyoid marrow having a distinct green color. After exposure to the air and drying, the grass-green color became more marked. On cutting into the vertebra, direct connection can be seen in many places between the greenish tissue surrounding the vertebral bodies and the greenish marrow of the enlarged marrow spaces. The greenish tissue is firmly adherent to the surface of the vertebræ and cannot be stripped from it.

Careful and thorough examination of the head fails to reveal any evidences of periosteal thickening. There is no sign of the presence of orbital growths.

(The dorsal and lumbar portions of the spinal cord were removed.) Cord and meninges present no pathologic appearances. The bony wall of the canal is covered with a thin layer of greenish tissue.

The right tibia is split. Its fatty marrow is partly replaced by marrow redder than that found in either the sternum or vertebræ, but small points of pyoid, greenish-gray marrow are also present.

The section of the growths on the right and left clavicles shows that these are subcutaneous tumors having all the gross characteristics of lipomata.

Anatomical Diagnosis. The character and location of the greenish growths in connection with the changes in the red marrow form a sufficient basis for the diagnosis of chloroma.

(To be Continued.)

COMPLICATIONS OF DIPHTHERIA; WITH SUGGESTIONS FOR THE FEEDING, MEDICINAL AND HYGIENIC TREATMENT.

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The Stomach.—The first effect of a diphtheritic toxemia is manifested on the stomach. We know that the diphtheritic toxin seems to inhibit the production of hydrochloric acid. Behring's theory is that the cells and the cell elements are disturbed in their activity by the action of the toxin and that the antitoxin stimulates their activity. The truth of this statement must be admitted when we compare what can easily be proven experimentally, that twenty-four to twenty-eight hours after the injection of antitoxin, hydrochloric acid was again present in the gastric juice.

Large Dose Required.—The question of dosage is important enough to consider in this connection. I have frequently found that a dose of 5,000 units was *not sufficient* in a severe case of septic diphtheria. When a second dose of 5,000 units was given no improvement was noted until twelve hours later, so the third dose of 5,000 units was given twenty-four hours later. Ten thousand units can be given in twenty-four hours, and even more, if necessary. I have come to look upon the employment of antitoxin in the same light as when an active drug is to be given. Take for example the effect of belladonna on the system. This drug will frequently be inert until its physiological effect is produced. One child will show its physiological effect after a very small dose of belladonna, while another child, more robust, can tolerate three times the dose to produce the same symptoms.

Feeding.—This has an important bearing on the prognosis of a case of malignant diphtheria. Knowing the effect of the diphtheritic poison, it is imperative to sustain the system by proper feeding. As there is a decrease in the quantity of hydrochloric acid secreted we must allow for this in ordinary food. An infant should be given one to five drops of diluted hydrochloric acid after its feeding, and if digestion is not improved, we must resort to predigested milk food consisting of peptonized milk.

When bottle-feeding or cup-feeding is unsuccessful, or when children refuse food, gavage should be remembered. Gavage through the nose is the plan of feeding very rarely used at the Willard Parker Hospital. In some cases the Casselbery method of feeding has served me very well. When vomiting is provoked by gavage and the tube is coughed out, I have frequently resorted to spraying the pharynx with a three per cent. cocaine spray several minutes before the time for feeding. When this method does not relieve the nausea and vomiting, absolute rest of the stomach is indicated, and we must resort to rectal feeding. Rectal alimentation should be given only by a trained nurse or by the physician himself. I have had excellent results in the feeding of intubated cases by rectal alimentation when the same was carried out by one who was competent. The rectum and colon are first washed clean by means of soap water. After the fecas are washed away I usually instruct the nurse to wait one-half hour, and then inject two or three ounces of the following:

℞ Yolk of egg..... 1 yolk.
Starch water..... 2 ounces.
Fairchild's peptonizing powder, 1 tube.
Salt ..... A pinch.

Mix thoroughly and inject slowly into the colon through a funnel to which a soft rubber catheter is attached. These injections may be repeated every four hours.

Nasal Cases.—In nasal diphtheria very high fever frequently persists. Great relief is afforded

by irrigating the nose and removing these membranous plugs. Septic infection will persist until the nose is thoroughly cleaned. The ease with which a membranous patch will extend upwards from the posterior pharyngeal wall should be remembered when determining on a plan of treatment. When the membrane exfoliates it will result in serious impediment to the entrance of oxygen. Mechanical treatment by means of normal saline solution will wash away these septic plugs and relieve obstruction to the entrance of air. Attention to the nose is more important in diphtheria than in any other disease. My rule has been to wash the nose with a weak permanganate of potash solution, or normal saline solution, *whether the case has a tube in the larynx or not.* My experience has been so good in tube cases that I do not *hesitate to advocate the use of nasal washing in every case of diphtheria* as a routine measure. Toxic substances can be more directly eliminated in this manner than by any other means.

Enlarged Lymphatic Glands.—I have frequently seen enlarged lymphatic glands greatly improve during the course of diphtheria when these necrotic patches were removed from the nose by cleansing. I believe that the same holds good in the treatment of lymphadenitis cervicalis and in scarlet fever.

Feeding.—When the appetite is so poor that milk will be refused, especially during acute febrile attacks, the curd should be removed from the milk by making junket and straining the same. Whey can be given in small quantities more often than milk containing the curd. Vegetable proteids can be fed in the form of soup made from split peas or lentils, or in the form of almond milk made by macerating almonds with water.

The Bowels.—Next in importance is the *elimination of poison through the bowels.* The treatment of diphtheria in children would always be commenced by producing active catharsis. The frequency with which pseudomembranes and infected secretions are swallowed shows the importance of this treatment. Children rarely, infants never, expectorate—they invariably swallow the loosened membranes. By producing liquid stools we eliminate toxins and thereby reduce the amount of toxemia. The best drug for cleansing the intestine is undoubtedly calomel. It is best administered by giving a large dose followed by repeated small doses. Salines are also advised. Vomiting will sometimes be produced after the administration of calomel; if so, then vegetable cathartics such as elaterin or podophyllin in 1-10 gr. doses or more should be tried. This active catharsis should be continued during the whole course of treatment, or until convalescence is established. We need not fear to deplete the body by this active cleansing, especially if we aid the volume of blood by introducing normal saline solution, as I shall describe later.

The Heart.—Next in importance to the conditions previously outlined is the effect of the toxin on the heart. When this condition is encountered great skill will be necessary to guide the patient to a successful recovery.

A study of the pathology of this disease will show the destructive effect of the toxins in the system. The retention of these poisons in the blood is a danger. Such danger consists in the development of *toxic myocarditis,* and unless the poison is eliminated, death may result. The toxin can be eliminated chiefly through the kidneys, skin and bowels.

Toxic Myocarditis.—Just as we treat the general toxemia by elimination through the skin by subcutaneous injections of hot water, through the bowels by catharsis, and through the kidneys with active diuresis, or by injecting hot saline solution into the colon, the destructive tendency of the toxin must be borne in mind if we wish to avoid death. We must remember that unless very vigorous treatment is instituted paralysis is possible, if the patient recovers.

Sustain the Heart.—The feeble condition of the heart's action requires active stimulation. Alcoholic stimulation by means of whisky, or better yet, by champagne, liberally administered, is of prime importance. I have frequently given one or two pints of champagne in twenty-four hours, in doses of one wineglassful every hour or oftener. Into the champagne strychnine can be given, 1-60 of a grain, every hour to a child one year old. Whisky should be administered freely, two or three teaspoonfuls well diluted can be given every hour, combined with strychnine.

We must not fear giving heroic doses, for it is only by heroic treatment that we can win in a deep-seated case of septic diphtheria. Tincture of musk in two to five minum doses every hour is valuable. The musk must be pure Tonquin musk. Hot coffee, into which small doses, 1-10 to 1-5 of a grain of sparteine is given, can be repeated every two or three hours.

Hypodermic Medication.—Several pints of normal saline solution are given first choice. The injection of ten to fifteen drops of spirits of camphor or camphorated oil will frequently have a toning effect on a weakened heart.

Throat and Lungs.—The treatment outlined for the relief of a general toxemia applies equally well, although indirectly, to the care required by the respiratory apparatus. Stenosis of the larynx demands the usual operative treatment, namely, intubation. One important point is essential, *i.e.*, that we admit all the fresh air possible to oxygenate the lungs. When we are dealing with crowded apartments and unsanitary surroundings, then pure oxygen should always be given. I make it a rule to exclude all the family from the sick-room, excepting the trained nurse, the mother, and father. To permit friends or several members of the family to go in and out of the sick-room is simply robbing the patient of oxygen in his struggle against death.

Position.—The semirecumbent position should be remembered to guard against hypostatic congestion of the lungs. Pneumonia, if present, must not necessarily be looked upon as a fatal complication. I have seen many cases get well both in hospital and private practice.

Local Treatment of Pneumonia.—The application of dry cups, three or more over the affected area, or a sinapism, to be repeated in twenty-four hours, will frequently relieve dyspnea or interference with breathing. This will also be valuable when cyanosis exists. Carbonate of ammonia is one of the best diffusible stimulants, and should be remembered in the pulmonary complications of diphtheria. It can be given in doses of one to five grains with or without a stimulant, repeated every hour until its systemic effect is apparent.

Hypodermoclysis.—Sometimes saline colon enemata are too difficult to manage, owing to lack of assistance or an uncontrollable child. When a child has a tube in its larynx for the relief of croup it may be advisable to avoid struggling, owing to the danger of excitement and the probable coughing up of the tube. At such times the hypodermic injection in the loose cellular tissue of the abdomen of a pint or more of hot saline solution will be equally well absorbed. For the latter method a long aspirating needle can be attached to a fountain syringe.

Nephritis.—In every case of toxemia, systematic examination of the urine is demanded. The quantity of urine should be noted for the reason above stated, that the glands of the body do not functionate properly. A specimen of urine should be procured and centrifuged. The sediment should then be examined microscopically for the presence of casts. The chemical examination should be made to determine the presence of albumin and blood. I do not lay much stress on the latter, but rely chiefly on the microscopical result. Active diuresis is demanded so that the system is drained of its poison through the kidneys. One of the best drugs to stimulate the kidney is strychnine. Another drug used to advantage is nitroglycerin. When scanty urine exists, then diuretin in doses of three to fifteen grains, three or more times a day should be tried. If vomiting or other gastric disturbances exist then diuretin in ten to fifteen-grain doses can be put into a suppository and administered per rectum. Sweet spirits of niter is a useful stimulant and diuretic in doses of ten to fifty drops every hour or two, as the exigency of the case required. Alcoholic stimulation, such as champagne, is not contraindicated even though nephritis exists.

Indications for the Introduction of Liquids into the Body.—What has previously been said in regard to the inactivity of the glands of the stomach applies equally well to the kidneys. The toxin paralyzes the secretory and excretory functions. It behooves us, therefore, to aid these functions by proper stimulation, hence large quantities of liquids are demanded. I have previously mentioned the necessity of warm saline solutions. The same can be introduced by means of a soft flexible colon tube or a rubber catheter attached to a fountain syringe. The temperature of the saline solution should be at least 115° to 120° F. When this is introduced slowly and the child becomes accustomed to the presence of the catheter it is not difficult to introduce several pints of hot salt water. This can be repeated every three or four hours, depending on the result following the injection. The pulse should show more regularity and usually more tension will be noted. The heart's action should be stronger and the heart sounds clearer.

A few facts of decided clinical importance have been noted by me at the bedside in the hospital: First, that *the temperature alone is not a sure guide as to the outcome of a case of diphtheria. Second, that the heart is the guide, hence a study of the pulse is more important in estimating the prognosis of a case of diphtheria.*

65 East Ninetieth Street.

UNCINARIASIS AS SEEN IN NORTH CAROLINA; ITS FREQUENCY, ETIOLOGY, PATHOLOGICAL SIGNIFICANCE, SYMPTOMS AND TREATMENT.[1]

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INTRODUCTORY:

My attention was attracted to this interesting and important malady by a case admited to the Maryland University Hospital, June, 1903, where I was then resident pathologist. This case was sent in from the dispensary, diagnosed malaria. Blood was negative, and showed absence of Widal. Differential leucocyte count showed an eosinophlia of 11 per cent. Stool examination by Dr. Wm. I. Mesick and myself resulted in diagnosis of uncinariasis, a diagnosis which Dr. Stiles kindly confirmed for us. So far as I can find recorded, this is the first case ever diagnosed in above hospital, and the fourth case recognized in Maryland.

Having become interested, I collected most of the American literature bearing on the subject, and on reading this literature, was very much impressed by the apparently exaggerated claims of every single investigator of the disease on the one hand, and on the other hand by the non-acceptance of these claims by the general profession, as manifested by the small number of cases and the scanty literature.

Hear some of these claims: Dr. Stiles says, "There is in fact, not the slightest room for doubt, that uncinariasis is one of the most important diseases of this part of the South. In

[1] Part of paper was read before the North Carolina Medical Association, Raleigh, N. C., May 23, 1904.

frequency it belongs in the general class with malaria, tuberculosis and gonorrhea." He was writing from South Carolina. Dr. H. F. Harris, of Atlanta, says: "The most common of the severe diseases of the South." Dr. Bentley K. Ashford, Assistant Surgeon, U. S. Army, from Porto Rico, writes: "This disease is the most destructive and general disease of Porto Rico."

Now add to this the unqualified endorsement of every single investigator of this disease, and you have one side of the question.

Let us now see the other side: The first case definitely recognized in this country was by Blickhahn, of St. Louis, in 1893. Up to January, 1900, there was only seven cases in American literature. In January, 1903, Dr. Capps, of Chicago, could collect only fifty-one cases in American literature, and since then the number has been increased, so that now we can find about 160 or 170 cases. So from these facts, we find an ignorance or skepticism concerning the importance of above claims, making the question one with two sides, at once becoming interesting and inviting to investigation.

My position as resident pathologist to the above institution expired in June, 1903, and in July I located in Onslow County, N. C., a sandy, warm country. I had not been there long before I encountered several cases. Then it was my good fortune to meet Dr. J. L. Nicholson, for whom I diagnosed microscopically several other cases. We were at once impressed with the great frequency of the disease, and realizing the truth of the above claims, and also that the disease was not attracting the attention in North Carolina that its frequency and importance deserved, we decided to investigate it as far as our means and time would allow. The primary object of the investigation was to show the frequency, and secondarily to learn what we could concerning the etiology, symptoms and treatment. Our plan of work was greatly facilitated when I was called to the chair of Pathology at Wake Forest College in September, 1903.

Plan of Investigation.—In October we proposed a canvass among the doctors of different counties scattered in various sections of the State, to the State Board of Health, provided they pay our expenses. The offer was accepted and the Board of Health had printed a number of circular letters, one of which was mailed to each doctor in a county together with a personal appeal, asking the doctor to collect stools from patients suffering with symptoms of uncinariasis. In the letter we also stated that we would visit the doctor's office in about ten days and with a microscope which we carried with us, we would examine all the stools collected, free of charge. One week of this work, in the latter part of December, proved very discouraging. Many of the doctors had not collected a single specimen, and only a few had collected one specimen. In the whole week's work, only four cases were found. Returning to Wake Forest, I began an examination of students, examining *all* the students from one county, before starting on a new county. We have kept etiological records (blanks) of all our cases. In these records the mode of conveyance is especially gone into, particular attention being paid to dirt-eating, drinking water and ground-itch. In all we have diagnosed and studied 147 cases since September and the contents of this paper is based upon a study of these cases. We shall ask pardon for the repetition of parts of the subject already gone into in other journals, in order that we may preserve the continuity of our theme.

Historical.—Our oldest reference to a disease which was most probable uncinariasis, is contained in an old Egyptian papyrus, thirty-five hundred years old. Here a disease is described whose clinical features are those of uncinariasis. It is further stated that patients suffering from this disease frequently pass worms, a supposed effect of the disease. The next references occur in the seventeenth and eighteenth centuries, when Piso, of Brazil, in 1648, Labat, of Guadeloupe, in 1742-1748, Chevalier, of San Domingo, in 1752, Dazille and Bason, of the Antilles, in 1776, and, lastly, Edwards, of Jamaica, in 1793, referred to a disease with an anemia of this special type. In Europe the disease was first discovered among the miners of Ansin in 1802. The special cause of the European type was discovered by Dubini, of Milan, Italy, in 1843.

In this country our earliest references to a disease which was almost surely uncinariasis is contained in certain records, which refer to an anemia associated with dirt-eating. To the credit of North Carolina, it may be said that the oldest of these records is from Dr. Pitt, occurring in 1808, who describes this clinical condition in dirt-eaters along the Roanoke River. Following this is Chabert's description of a similar condition among the slaves of Louisiana, then Jordan's of Person County, N. C., description of negro consumption. Then Cottling's, of Richmond County, Ga., in 1836. Little, of the pine barrens of Georgia, and La Conte, Florida, both these last in 1846, and finally Duncan, in 1850, in St. Mary's Parish, La., all describe a condition exactly corresponding to clinical uncinariasis as we now know it.

In 1864, Dr. Ferdinand Herff, of San Antonio, Tex., performed an autopsy on a Mexican woman dying in his care, in whose intestines were found numerous small round worms, which at the time he thought were young ascarides, and he now believes were uncinaria. This is very probably our earliest pathological reference to the American type of the disease. In 1893, Blickhahn, of St. Louis, recognized as such the first case of uncinariasis diagnosed in this country. The case was that of a German, three years resident of the United States, and he most probably contracted the disease in Germany and therefore suffered the European type. This is the last we hear of the disease until 1896, when Mohleau, of Buffalo,

reports five cases, three of which were imported. No other case is recorded until Tebault, of New Orleans, adds it in 1899. This was an Italian boy who developed the disease from New Orleans. We see from this in December, 1900, there were only seven cases recorded in American literature. Then Dr. Bailey K. Ashford records four cases, all imported from Porto Rico. To Dr. Ashford belongs the credit of first seriously directing attention of Americans to this disease. Dyer, in St. Louis, adds another case in March, 1901. Then comes Dr. Claytor's case from Virginia, the first of American type definitely recognized by Dr. Stiles.

Allen and Behrend, from Philadelphia, report another case, imported from Italy, in July, 1901. Dr. Gray, of Richmond, reports two cases from Virginia in September, 1901. Dr. Allen J. Smith reported eight cases before the Texas Medical Society this same year. To Dr. Smith belongs the credit of pointing out the endemic occurrence of the disease. Dr. Schaeffer, of Galveston, added another case in October, 1901, which was imported from Mexico. Still another is reported by Dr. Boggs, of Pennsylvania, the same year. Dr. John L. Yates records the first autopsy on the disease where is was definitely recognized in America. This case was also the first case diagnosed in Maryland. By the end of 1901, there were about twenty-seven cases reported in Americal literature. In January, 1903, Joseph Capps reports an autopsy, and was able to collect fifty-one cases from American literature.

In 1903 Dr. Claytor's paper, before the American Medical Association, at Washington, brought out in discussion Dr. Bondurant, of Mobile, who reported fifty microscopical diagnoses from Southern Alabama, also Dr. Harrison reports three cases from Talladega, Ala. At the same time, Dr. McCaskey, of Fort Wayne, Ind., reports three cases, and Dr. Claude A. Smith, of Atlanta, Ga., said that he had diagnosed so many cases that he had ceased to record them. Then, in the November number of the *American Journal of the Medical Sciences*, Dr. Allen J. Smith reports eight cases more in detail, and in the same issue of this journal, Dr. Craig reports twelve cases occurring in returned Philippine soldiers. This is about all the cases from which we can draw conclusions. The important deductions which we obtain from this array of historical points is, that this disease of a contagious nature has lasted long enough to account for its widespread distribution and frequency.

Frequency.—This is one of the most important points to ascertain. The importance of the disease will rest chiefly, first upon its frequency and secondly its pathological significance. In order that we may have a standard of comparison, let us look at its frequency elsewhere. Since Dubini discovered the cause of the disease in 1843, it has been found in so many countries, that it is very probable that it is endemic the world over between the parallels 51° 30′ north and 30° south. In Egypt it is found in almost every cadaver. So frequent is it, that it is known as Egyptian chlorosis. In India, Manson states that in certain sections, 75 per cent. of the population is affected. In Madras 52 per cent. are affected. In Kiolo, Japan, 13 per cent. In Java, Ceylon, the Straits Settlements, and in this hemisphere, in Brazil and Guinea, it seems equally prevalent. In Porto Rico, last year, one-fourth the death rate was due to an anemia, which in all probability was due to this parasite. The government of the island of Porto Rico has recently appropriated $5,000 for the study of this disease.

Now let us come a litle nearer home and see something of its frequency and distribution in the United States. As above stated, the first case recognized in this country was that diagnosed by Blickhahn in 1893. But the interest of the profession was not aroused until Dr. Stiles brought his painstaking investigation before us in 1902. Of course it has not been studied enough yet to allow more than appropriate conclusions concerning the frequency. But we can say now, that the more the disease is studied, the greater does this frequency appear. The writer on this subject in Allbutt's system, has well said: "To diagnose the disease, one only has to suspect its presence." Its distribution in the United States is as follows:

New York: nine cases reported, seven of these imported and it is not probable that the other two were infected in the State. Pennsylvania: three cases, all imported. Maryland: four cases, all imported. Virginia: three cases, all American type. Georgia: Harris reports thirteen cases, and Claude A. Smith has seen so many that he has ceased to record them. Beside these two observers, Dr. Stiles found the disease very prevalent here. South Carolina: Dr. Stiles in his tour of investigation found sixty or seventy cases. Florida: Dr. Stiles states that it does not differ from Georgia in point of frequency. Alabama: Dr. Bondurant reports fifty cases, and Dr. Harrison three. Louisiana: One case could be found recorded. Texas: Dr. Allen J. Smith in examining the stools of eighty-six students found eight infected. Three other cases could be found recorded from this State. California: Claims fifteen cases, all imported from Philippines and Mexico. Missouri: two cases, both of which were probably imported. Indiana: three cases, all probably imported.

North Carolina.—In this State, when we began our investigation, there were only two cases recorded. These were seen by Dr. Stiles in his Southern tour of investigation. As above stated, the investigation was made by corresponding with doctors, arousing interest and securing the cooperation of a doctor wherever possible. He was asked to send specimen of stools from patients suffering from symptoms indicating uncinariasis, which group of symptoms were mentioned in enclosed circular. The second method

was by systematic examination of students in college. No selecting was done except by counties. Most of the counties from which the students were examined were from Eastern Carolina. The results are truly surprising and almost beyond our conception. In Wake Forest College there are 325 students. About 140 examinations were made and 52 cases, or 37 per cent. of those examined, were found infected. Most of them were mild cases, many without any symptoms whatever. Interesting to compare with these findings are those of Dr. Allen J. Smith, of the University of Texas. He examined the stools of 86 students and found eight cases infected.

Many of the counties showed every man infected. Here are the results of examination according to the counties, which has an important bearing on the distribution of the disease in North Carolina: Sampson Co., six men in college, all infected, 100 per cent.; Pender Co., three men in college, all infected, 100 per cent.; Iredell Co., four men in college, all infected, 100 per cent.; Columbus Co., two men in college, all infected, 100 per cent.; Cumberland Co., one man in college, infected, 100 per cent.; Chowan Co., one man in college, infected, 100 per cent.; Pasquotank Co., one man in college, infected, 100 per cent.; Washington Co., one man in college, infected, 100 per cent.; Wilks Co., one man in college, infected, 100 per cent.; Perquinnans Co., one man in college, infected, 100 per cent.; Northampton Co., one man in college, infected, 100 per cent.; Bladen Co., one man in college, infected, 100 per cent.; Martin Co., one man in college, infected, 100 per cent.; Hertford Co., sixteen men in college, fourteen examined, ten infected, 72 per cent.; Bertie Co., four men examined, two infected, 50 per cent.; Onslow Co., two men in college, one infected, 50 per cent.; Burke Co., three men in college, two infected, 66⅔ per cent.; Henderson Co., two men examined, one infected, 50 per cent.; New Hanover Co., only one man examined from this county and he was infected; Halifax Co., two men were examined and one infected, 50 per cent.; Durham Co., two men examined and one infected, 50 per cent.; Roberson Co., five men examined and three infected, 60 per cent.

South Carolina.—This State furnished six of the above fifty-three cases, distributed as follows: Florence Co., six men in school, four were examined, all infected. Two would not submit stools, but in appearance were as typical as other cases from same county. Another case came from Marion. In the last case I did not get the county. One of the above fifty-three cases came from Sevier Co., Tennessee, a very mountainous county. These are facts, and are not hard to interpret. That there could have been no mistake in recognizing the eggs I will state that in 70 of the above 147 cases, where I have heard from the effect of treatment, in not a single case, did thymol fail to show the worms in the stool. Its occurrence in Iredell, Burke, Wilks counties, North Carolina, and in Sevier Co., Tennessee, would indicate that the clay counties are by no means immune. According to our observation, the cases are not as frequent, and not as severe as they are from Eastern Carolina. Add to these fifty-three students, seventy-one cases occurring in the practice of Dr. Nicholson, of Richlands, Onslow Co.; four cases for Dr. E. L. Cox, of Jacksonville, Onslow Co.; six cases for Dr. S. N. Harrell, of Tarboro, Edgecombe Co.; four cases for Dr. I. F. Hicks, of Dunn, Harriet Co.; one case for Dr. H. W. Lewis, of Jackson, Northampton Co.; one case for Dr. R. H. Speight of Wrendale, Edgecombe Co.; seven cases for Prof. Stevens, which he had collected from the State's prison, and we have 147 cases. From the 147 cases, etiological records have been obtained from 118 cases.

These records bear especially upon the relation of dirt eating, drinking water and ground itch to the disease.

Etiology.—This part of our subject naturally divides itself into two heads: First, a study of the anatomical and biological characteristics of the parasite, and secondly, its mode of entrance into the host. About the first we know much, about the second, little. And it is this very part of the etiology that concerns us most, for upon this knowledge will depend the rational and effective application of preventive measures. I shall consider the anatomy and biological characters first.

Anatomy of the Worm.—Dubini, of Milan, Italy, discovered the cause of the European type of the disease in 1843 and called it *Anchylostoma duodenale*, or *Uncinaria duodenalis*. In 1902, Dr. Charles Wardell Stiles, comparing worms collected from different countries noticed a difference in the American and European worms, thereby discovering a new species as a cause of the American form of the disease. This worm he has named *Uncinaria Americana*. This is a nematoid worm, a member of the family *Strongyloidæ*, whose members are characterized by the following points: Body cylindrical, rarely filiform; mouth in axis of body, dorsally or ventrally flexed, and surmounted by six cubical papillæ, four of which are submedian. Esophagus, more or less swollen posteriorly. Male presents a caudal bursa which may be complete or divided, and encloses one or two spicules. Female presents a vulva anterior or posterior to midline and two ovaries. This family is divided into two subfamilies and it is to the subfamily (*Strongylinæ*), the genus *Uncinaria* belongs. These are worms whose mouths are surrounded by a chitinous armature. Male presents a caudal bursa, with lateral and dorsolateral rays arising from a common base. Female presents two ovaries. Of the genera which compose the family, *Strongylinæ*, the genus *Uncinaria* is characterized by the dorsal flexure of its head, giving it a hook-like contour, from which it derives its name. Let us study the anatomy a little closer: Male, 6 to 9

mm. long; female, 8 to 11 mm. long; both about 4 mm. in thickness; color, white, or occasionally brown from contained blood; shape, head of male dorsally flexed, giving a hook-like contour, tail of male expanded, umbrella-like, tail of female conical.

Now to start at the head, we have a cup-like arrangement, measuring 100 μ anteroposteriorly, transversely and in depth. This cup is composed of four pieces, two curved quadrilateral plates incompletely united, ventrally and dorsally. Dorsally this incomplete union is strengthened by a dorsal reflection of the dorsomedium tooth, making the third of the four pieces, and the fourth piece exist in the form of a rim to the cup. This rim gives off on each side two lips, the two ventral are symmetrical semilunar-shaped and project well into the oral cavity. The two dorsal are rudimentary and only reach oval margin. Beneath these lips are six papillæ, three on each side, two beneath the ventral and one beneath the dorsal lip. The oral mucosa is reflected in folds to these papillæ, giving to the pharynx, when viewed from above downward a striated appearance. At the bottom of this cup begins the mouth proper. This is elliptical in shape and measures 50 to 70 μ anteroposteriorly and 40 to 50 μ transversely, but this shape is variable, as it is subject to muscular movements. Surrounding the margin of the mouth is a delicate transparent cuticle, continuous with the oval mucosa. Projecting into the base of the mouth is the esophagus with an armament worthy of description. This consists of a large tooth placed in a dorsomedian line, convex on its outward surface and concave on its inner surface. On each side of this dorsomedian tooth we have two sharp chitinous pointed lancets. The pair closest to the tooth are very sharp, point transversely and are known as the lateral lancets. The two more ventrically placed are more conical in shape, look backward and are known as the ventral lancets. These five structures are connected by a fold of oval mucous membrane so arranged as to leave a crescentic opening to the esophagus.

The esophagus is bottle-shaped, the large end posterior, measuring 750 μ in length by 160 μ in its thickest portion. It is composed for the most part of a thick muscular wall. Cut transversely, its opening appears triradiate posteriorly as it opens into the intestine, this opening is guarded by a valve. Lying along the esophagus are two glands, whose secretion is emptied just within the line of the ventral lancets. It is supposed that this secretion prevents the coagulation of the blood sucked out by the worm and is also supposed when absorbed by the host to exert a toxic effect. Now notice this effective blood-sucking arrangement. The muscular esophagus forces its pharyngeal portion into the chitinous cup, and the lancets and tooth now lie against the cup's walls. The esophagus retracts and more or less of a vacuum forms, the rim of the cup having previously been placed against the intestinal mucosa. Into this vacuum, the cup, this intestinal mucosa bulges in the form of a little pledget, which the large hook-like dorsal tooth catches in its return to its position and holds, while the lateral and ventral lancets play back and forth, continually wounding the delicate mucous membrane. This blood is kept fluid by the secretion of the two large glands above mentioned, sucked into the strong muscular esophagus, and emptied into the intestines. A return into the esophagus is prevented by a valve which guards its opening into the intestines.

Here we have an arrangement very much like a Davidson syringe. The intestine empties on the ventral surface of the female close to the tip of the tail. In the male it empties in common with the genital aperature, on the dorsal side of the conical papillæ within the caudal bursa. The worm is covered with a delicate transparent cuticle, laterally striated and this shows dorsal, ventral and lateral longitudinal markings. Beneath the skin is an encircling layer of muscularis with inward extensions for the support of the esophagus, intestines and genital organs. The generative organs in the male consist of two plicated tubular testicles lying along the intestine. These empty about the middle of the worm into a seminal sac, and this again empties by a duct on the dorsal side of the caudal nodule, through which passes a forked, barb-tipped penis about 9 mm. in length. The female generative organs consist of a vulva, placed anterior to the midline of the worm, and this is composed of two transverse folds. This vulva leads into a short vagina, which terminates in two uteri. These are tubular, one coursing posteriorly, the other anteriorly. The uteri terminate in two tubular ovaries, both of which coursing anteriorly, lie in plicated folds along the intestine.

The caudal bursa is so important in the differentiation of species, that it demands rather detail description. It is composed of an excess of cuticle, forming an umbrella-like expansion and this umbrella is held open by finger-like prolongation of the encircling muscular cord backward. These supporting muscular prolongations are called the caudal rays. The bursa is divided into two well-marked lateral lobes, a divided dorsal lobe and rudimentary ventral lobe. The dorsal ray arises by a common base with the dorsolateral ray, the dorsal ray going to the dorsal lobe, where it ends bipartite, the dorsolateral curving downward into the lateral lobe. The ventral ray is also bipartite and just within in its base we find a rudimentary subventral ray. The male uses this bursa in clasping the female *in coitu*. The thousands of eggs, deposited in the stools furnish the doctor with a diagnostic omen and the ignorant laity with a source of infection.

The description of the eggs is most important. They are oval, symmetrical in shape, measuring

68 by 38 μ in size, composed of a beautiful laminated transparent shell, enclosing a granular or segmented yolk. We never find the eggs enclosing an embryo in the fresh stool. The egg must develop outside of the body, and therefore, for every worm in the intestine the host must have swallowed a young uncinaria. These eggs, when exposed to a temperature of from 21° to 37° C., and kept in a semisolid stool, supplied with oxygen, hatch out into the rhabditiform embryo in about forty-eight hours. This hatching is delayed by too much moisture, lack of oxygen, or being kept in the dark. Drying destroys the eggs in twelve hours. In about three days after hatching the young worm reaches the second ecdysis. This worm lives well in water. This is the infective stage. After entering the host, it passes through other stages, until it finally develops into the mature parasite.

Let us now return to its mode of entrance into the host. This is important, for the preventive treatment depends upon a correct understanding of this point. Three possible routes of infection exist: (1) Taking the food contaminated with fecal matter, in other words dirt-eating; (2) through the drinking water; (3) through the skin in the lesions of ground itch. Let us study these portals of entrance a little more in detail.

The first, dirt-eating, we can readily understand. It is the simplest. Dr. Stiles seems to think it is the principal mode of infection. So much importance is attached to this view, the disease is known as dirt-eater's anemia, brickmaker's anemia, tunnel anemia, miner's anemia, etc., all occupations associated with soiled hands, and of course a certain amount of dirt-eating. Then we must not forget that dirt may get into the mouth on fresh vegetables, grown in the ground, such as water cress, celery, radishes, etc. Here it is necessary to keep in mind Allen J. Smith's caution, that all dirt-eaters are not predisposed to hookworm, for some dirt could not possible harbor the larvæ, such dirt as soot, ashes, brick and mortar. Again we should remember that dirt eating is often an effect and not a cause of anemia. Every clinician knows about the "longings" of pregnancy and anemic conditions for such things as clay, sand, etc.

Second Mode of Infection, Drinking Water.—As Dr. Stiles has pointed out and I have frequently verified, the eggs die or degenerate rapidly in water. So that if a stool was washed immediately after voiding into water, the eggs would rapidly perish. Not so if the stool is deposited on the ground for two or three days, until the eggs hatch out into the second stage. Now if a rain falls, the parasites are carried into a nearby stream, spring or surface well.

Loose has shown that these worms pass rapidly through sand filters, and that they will live thirty days in water. These larvæ, once in the water, sink to the bottom of the well; but the bucket also sinks, and could as easily bring up the young larvæ, as it does the grains of sand contained in nearly every bucket of water. Dr. Smith seems to think the wind plays a part in spreading the dry feces in the form of dust on the house tops, where the eggs can easily be washed down by the first rain into the cistern, and there develop; but experimental evidence proves that both the eggs and larvæ die rapidly on drying. So until it is proven, that the eggs can withstand drying, we can disregard the wind as a factor in spreading the disease.

Third, ground-itch, as a portal of entrance: we have purposely left this until the last, because we want to go more in detail here, as we believe it the principal portal of entrance in Eastern Carolina. What relation does ground-itch bear to uncinariasis? That is, we think, an important question to answer. Now, in considering this phase of our subject, the first question to present itself is this: Is ground-itch infectious? Here is the evidence derived from the articles of Elliott (?), of Assam, India, who gives clinical evidence, from Dalgetty, South Silhet, India, who furnishes clinical and experimental evidence, and, lastly, from Bentley, in South Africa, who gives experimental evidence, and all this answers the question in the affirmative.

In *The Journal of Tropical Medicine* for December, 1900, Elliott reports the clinical features of ground-itch, and in considering the cause arrives at the following conclusions: (1) The disease manifests itself from May until September, the largest number of cases occurring during the months of July, August and September; (2) It occurs after heavy rains, when the ground is moist and sticky; (3) it occurs only in those who go barefooted and expose themselves to the wet earth; (4) it does not occur at all, or only slightly, on new land; (5) cases are most numerous and severe in those who work about the lines where the ground is thoroughly manured. The frequency and severity of the cases seem to bear a close relation to the fecal content of the soil.

Then to produce ground-itch, we must have contact of the bare skin with fecal-contaminated soil, at a certain temperature and containing a certain amount of moisture. All of these five factors must be present, *i.e.*, (1) bare skin, (2) soil, (3) feces, (4) moisture, and (5) certain temperature. The first three of these conditions will not produce it. Ground with proper temperature, fecal contamination and bare skin will not produce it, else it would occur in April and May, when the ground is dry. Ground with requisite moisture and temperature does not cause it; if it did, it would not be so rare on new lands. It is not airborn or the Europeans would suffer alike with the natives. The Europeans wear shoes. We have here a mass of circumstantial evidence that points, first, to infection as a cause of ground-itch, and second, the infectious agent as derived from the human feces.

Assuming infection, what is the infectious agent? Do you notice any conformity of above conditions, *i.e.*, feces, temperature, moisture, etc.,

to the biological requirements of the hookworm? You certainly do.

Is it possible that these parasites produce ground-itch? Allow Bentley to answer: Having had his attention attracted to this possibility, by finding a rhabditiform in the lesions of the ground-itch, he performed the following experiments: He took two stools, one we will call "A" and the other "B." "A" was infected with the larval uncinaria. "B" was free from uncinaria. He then sterilized a mass of sand. Dividing this, he mixed part with stool "A" and part with stool "B." Now "A" was divided into two portions which we will call "a′" and "a″." "B" was likewise divided into "b′" and "b″." "a″" and "b″" were now exposed to the air for eight hours till dry. At this time all four portions were applied to the bare skin. "a′" produced an erythema exactly resembling that of ground-itch and on examining "a′" most of the worms had disappeared, only a few dead larvæ remaining. "a″" contained the original number of dead embryos. Of course these were killed by the eight hours' drying.

Dalgetty agrees with Elliott on the predisposing causes, viz., temperature, moisture, feces, etc., but differs with Bentley as to the exact cause. Dalgetty's work preceded Bentley's by two years. Dalgetty attributes ground-itch to the *Rhizoglyphus parasiticus,* a parasite closely resembling the itch mite; and its association with fecal material, he explains by saying that the parasite lives best on rich organic matter. We are not inclined to accept Dalgetty's theory as to the direct cause for these reasons: First, from his paper, his technic appears faulty. Second, he does not give the per cent. of cases, in which this parasite was present, a condition concerning which he would not have remained silent had he found any number of cases. Third, it fails to explain the association of ground-itch with fecal contamination of soil. It therefore seems very probable that ground-itch, as claimed by Bentley is an infectious dermatitis, due to the entrance of the larval *Uncinaria,* carrying in with them certain bacteria, which modify the lesions.

Assuming that ground-itch is due to infection with these larvæ, we may very properly ask: Does this cutaneous lesion bear any relation to the intestinal lesion? To answer this, we refer you first to Loose's experiments. Loose is a careful man, and his work is accepted by all authorities. His experiments were done as early as 1898. He examined the feces of two puppies, and assured himself that they were not infected with hookworms. He then shaved their backs, and applied to their bare skin a poultice composed of infected stools and charcoal. Both pup pies died on the ninth day after the poultice was applied, and many young hookworms were found in their intestines, which corresponded in stage of development to young worms in another dog's intestine, which dog had been infected from the same stool from which the poultices were made. Then he performed the same experiment on a man. His stools were examined and found free from hookworm eggs. Then a poultice composed of feces with hookworm larvæ in them was applied to the back of the forearm. On the seventy-first day thereafter, the man showed hookworm eggs in his stools. This proof that uncinaria may enter through the skin, is accepted. It is not without analogy.

The weight of evidence goes to prove that this occurs in infection with the *Bilharzia hematobia,* where the parasites are found in the ureter, bladder and kidneys. But, you say, having entered, how do they locate in the intestine? We do not know how, but we know they do.

The selective affinity of various parasites for different tissues, is a well-recognized fact, and is accepted by all authorities. We have example of this selection an infection of the brain with *Cœnurus,* infection of the liver with *Ecchinococcus* or *Amœbæ,* infection of the muscles with *Trichinæ spiralis,* and lately an infection of the intestine with *Anchylostoma duodenale.*

The fact stands, and some day the explanation will follow. Now, assuming that the frequency is accepted, we believe you will all agree that the preventive treatment is the most important, for upon this will depend the extermination of the disease.

To effectually and rationally apply the prevention it is necessary to know the route of infection.

Of the above three routes of infection, *i.e.,* dirt-eating, drinking water and ground-itch, we think we can safely accept all as possible routes, and in applying our "ounce of preservation," all must receive due consideration. But which is the most important route? Which portal is the most accessible to the hookworm? To answer this question we have collected etiological records from 118 cases distributed as follows:

71 cases from Dr. J. L. Nicholson's practice, Richards, Onslow Co.
3 cases from Dr. Cox's practice, Jacksonville, Onslow Co.
4 cases from Dr. Hicks' practice, Dunn, Harriet Co.
4 cases from Dr. Harrell's practice, Tarboro, Edgecombe Co., and
35 cases from Wake Forest students.

Race.—All of the 118 cases were white. We could not find a single case in the negro, although Dr. Nicholson's practice is in a country, where about one-half the population are negroes. Considerable trouble was taken to find it in the negro. Only one negro was encountered who presented suspicious symptoms. Microscopical and thymol test were both negative. Some have held that this relative immunity of the negroes was only apparent and not real, that the prominent symptom of uncinariasis, pallor, was absent on account of the negro's color. This is a mistake, for not only is the pallor absent, but the other symptoms of uncinariasis as well. It is there-

fore our experience that the negro is partially immune. He is, however, as susceptible to ground-itch as the white.

Sex.—Of course the students were all males and in considering the influence of sex should not be taken into count. Of the other 82 cases, 47 were males and 35 females.

Residence.—Of the 118 cases, 109 lived in the country, nine in town, but this includes 71 cases from Dr. Nicholson's practice, all of which were from the country. It is not right to consider these in the etiological bearing of residence. We shall therefore only consider the bearing of the 35 students on this point. All of these students except seven were from the country. These seven, with the exception of two, were from mere villages, and all 35 had lived in the country at some period of life.

Soil.—It is most frequent on a soil composed of an upper layer of fine, gray, compact sand, with a substrata of clay about six or ten inches below the surface. Another soil that seems favorable is the loamy, fine, sandy soil, *i.e.*, a fine sand mixed with much decaying vegetable matter. Here we may have no clay subsoil. It has been interesting to observe its almost entire absence on a soil made up of coarse sand, six or eight feet deep. We account for this distribution on the biological requirements of the parasite. On the first two of the above soils, you have a structure to hold moisture, on the last, rapid drying and death of the parasite.

Occupation.—117 worked on farms, one worked in a cotton mill, but had lived on a farm.

Age.—The youngest patient, two years and four months old; the oldest patient, fifty-six years; two were fifty years old. The students ranged from seventeen to thirty years, 12 were under and 18 between twenty and twenty-five years, making 30 of the 36 patients under twenty-five years of age.

Under five years there were	5 cases
Between fifth and tenth year	14 cases
Between tenth and fifteenth year	28 cases
Between fifteenth and twentieth year	15 cases
Between twentieth and twenty-fifth year	9 cases
Between twenty-fifth and thirtieth year	2 cases
Between thirtieth and thirty-fifth year	4 cases
Between thirty-fifth and fortieth year	1 case
Between fortieth and forty-fifth year	0
Between forty-fifth and fiftieth year	3 cases
Between fiftieth and fifty-fifth year	0
Between fifty-fifth and sixtieth year	1 case

Average age of onset seven and one-half years.

Under ten years of age, 70 per cent of our cases were infected.

Family Disease.—Of 70 cases in Dr. Nicholson's practice, 39 families were represented. These families number a total membership of 280. Of the 280, 32 per cent. have been microscopically diagnosed, and 25 of the remainder clinically diagnosed uncinariasis. Again it has been noted that it seems to be a family trouble generation after generation. Furthermore the large number of aggravated cases, seen in certain families, would seem to indicate that prolonged and intimate association upon a soil intensely contaminated an etiological factor of great importance.

Dirt-Eating.—Of the 36 students, three admitted dirt-eating, two ate parched coffee, and 31 denied dirt-eating. Of the 82 mixed cases, 64 denied dirt-eating, eight confessed, five chewed rosin, two chewed rags, two chewed sticks and two chewed coffee. A close study of our cases does not encourage us to attach much importance to dirt-eating as a source of infection. And by dirt-eating, we mean putting anything in the mouth contaminated with feces, either the soiled hands, fresh vegetables, as celery, water cress, etc., or the soil itself.

Drinking Water.—All of our cases show a questionable water supply. Those from Eastern Carolina, drank from surface wells, varying from six to 25 feet in depth. Many of these wells were uncurbed and uncovered. Our Western cases from the mountainous country drank from springs. And as it is a custom on farms, both western and eastern cases occasionally drank from creeks, while out at work. Notwithstanding this questionable water supply and Loose's demonstration, that the larvæ pass rapidly through sand filters, and live well in water for at least thirty days, we are not inclined from a study of our cases to attach much importance to drinking water, as a source of infection. Like dirt-eating, we believe it a probable source, and possibly accounts for the scattered cases or the light cases, and those which develop without a preceding attack of ground-itch. Our reasons for this view are, (1) If it is due to drinking water why should children be more often infected than adults? They drink less water, and therefore would not be so much exposed to contagion as the adult. Our statistics show that 70 per cent. of the cases begin before the tenth year. (2) If it is true, as has been suggested by some authorities, that it is due to the careless drinking of water from springs and creeks, then it should occur principally in males, and be more frequent after the fifteenth year, for it is not until this age that the child begins to work away from the house on the farm. (3) Again, here is a careful observation that opposes the water theory of infection. The tenant classes usually move every year or two to a new farm; they usually move in the winter. The ground is sterilized by the frost and snow. A new tenant moves in, and if the well is the source of infection, you would suspect the new family to become victims. This does not usually follow unless the new family have the same unclean habits as their predecessors.

Ground-Itch.—Every case, except one, gave history of ground-itch. This exception was a case from Iredell Co., who said he did not know what ground-itch was. Admitted that he had suffered with dew-crack. Now the above etiological data when considered together would seem to justify the conclusions, *that the mass of*

evidence favors ground-itch as the most important factor in the transmission of the hookworm disease, and that while drinking water and dirt-eating are predisposing factors, they are not so important as ground-itch.

What are the grounds for such a conclusion?

1. It has been noted that in localities where ground-itch is frequent, there hookworm disease is also frequent. Where there is no ground-itch, there is little or no hookworm disease.

2. Then over 99.5 per cent. of 150 cases gave a history of ground-itch. If we accept Bentley's theory of ground-itch, *i.e.*, a dermatitis due to the carrying in of bacteria by the entrance of hookworm larvæ, and not to the larvæ themselves, we can then explain those cases without ground-itch as due to larvæ entering with only a few bacteria or non-virulent bacteria. In other words, the question is whether these larvæ can enter without producing a local lesion, as suggested. Probably a better explanation of the cases without ground-itch, is that they were infected though water or dirt-eating.

3. In 69 out of 90 cases, the history was that ground-itch preceded the development of the other symptoms. In 18 cases, the patients could not be sure about this point.

4. We have noticed that in the majority of cases, the severity and number of attacks of ground-itch bear a definite relation to the severity of uncinariasis. Severest cases give a history of severest ground-itch.

5. The age of our patients affords valuable information. A glance at the age table impresses one at once, that the disease is definitely associated with the period of life when the child goes barefooted. It does not occur, except rarely, under three years of age, for until then the child runs about but little, and then indoors, and it is not allowed to run about after rains until the ground is dry. From this age, one will observe a definite and steady increase until the fifteenth year, when there is a decline. This corresponds to the period of greatest activity of barefooted children. In the South, these children begin to wear shoes all the year round at the ages of thirteen to fifteen years. Cases are comparatively uncommon beyond the twenty-fifth year; rare beyond thirty, and when they do occur, are light and nearly always on the decline. Among the students, the disease was light and on the decline. This was because these men had been wearing shoes the year round for the last five to ten years. Here is an interesting observation, bearing on the association of barefootedness with uncinariasis. Of my 53 students, 36 were treated with thymol and the number accurately counted after the method of Allen J. Smith in the November, 1903, number of *The American Journal of the Medical Sciences.*

The average number of worms passed was 20 in 35 of the cases. These men had ceased to go bare-footed at the age of twelve to fourteen years. There were six men from Sampson Co., who went barefooted in the summer until seventeen to twenty-four years, this being a peculiarity of these men. They were given the same treatment as the others, but passed an average of 113 worms. The number passed by these six men were 350, 120, 100, 68, 32 and 10. In our cases we have frequently noticed this association. Our severe cases, beyond twenty years of age, are in those who have gone barefooted much of their lives.

6. As pointed out above, it is a family disease. Occasionally we have single cases in a large family. This case for instance; a child twelve years old, a member of a family of eight children, was the only one affected. An intelligent mother affirms that she is the only child who ever suffered with ground-itch.

7. We have observed, what may be termed acute uncinariasis. To illustrate we give as an example, G. S. N., aged nine years, male. Healthy all his life. September, 1903, a very severe attack of ground-itch, could not walk and had to remain from school. This attack lasted one month. Latter part of October and early November began to show anemia, poor appetite, listless, headache and diarrhea. These symptoms continued, increasing in severity until December; he presented on inspection a picture of chronic parenchymatous nephritis. Stools were examined microscopically. Many *Uncinaria* eggs were present. Thymol was used, a large number of worms were expelled, the anemia treated, and complete recovery followed.

We have four more similar cases, where there is one severe attack; it may be the only one ever suffered from, and this is followed in from six to eight weeks by rapid and profound anemia, which yields promptly to thymol and iron.

8. When the patient ceases to be troubled with ground-itch, it is the rule for improvement to begin. Age table shows this.

9. Allow us to offer one more point in favor of ground-itch as a cause, at the same time reporting the youngest case on record.

A baby, two years four months old, a member of a family of six children. The mother and the other five children have been microscopically diagnosed uncinariasis. This family lives in a log cabin on a *dirt floor.* In the summer, when this child was seventeen months old, the mother and the other children assisted a neighbor to "hang tobacco" a little way from her cabin. The baby was left at home on the dirt floor. In a very short time the baby suffered with three attacks, of what the mother calls "mad-itch," over the buttocks and posterior thighs. Up to this time the baby was red-faced and healthy. Now there started a decline, so that when this case was seen, last month, it was one of the most distressing and well-marked cases of uncinariasis that has come to our notice.

In conclusion, allow us to ask this question: If drinking water and dirt-eating are responsible for the majority of cases, as Dr. Smith and Dr.

Stiles would seem to favor, why does it occur so rarely under three years of age? For who gets more dirt than the baby, and why should it harbor other intestinal worms more frequently than any one else, yet fail to show hookworms? And if drinking water is such a causative factor, why should it be more frequent in children, who drink less water than adults?

We therefore conclude, *concerning the etiology of hookworm disease, that ground-itch is by far the most important portal of infection, and that dirt-eating and contaminated water supply, while capable of infecting, are not nearly so important as ground-itch as a source of infection.*

A CASE OF PNEUMOMELANOSIS.

BY FRANK I. GIVEN, M.D.,
OF HILLSBORO, NEW MEXICO.

John Ryan, age fifty years, of Irish descent, occupation gold and copper miner. Began to lose strength and flesh and develop cough about 1898. Did not become incapacitated for the purusit of his vocation until about 1900. Had been a hard drinker for years.

Physical Examination, January 8, 1904.—The chest seemed abnormally large, measuring 48 inches at the fourth rib. Expansion one-half inch. Percussion note flatter than normal over the entire pulmonary area, excepting at the apices where it became slightly tympanitic. Moist bronchial râles over the trachea and bronchi. Bronchovesicular respiration over the lower lobes, the vesicular quality gradually diminishing toward the apices where the sound became blowing in character. Vocal resonance and fremitus were negative as far as any aid to diagnosis was concerned.

The heart's action was feeble, but there was no indication of organic trouble. Abdominal organs were normal. There was present a comparatively scanty expectoration of a jet black sputum about the consistency of that of ordinary phthisis. At times there was present in the sputum particles of calcareous material varying in size from that of a grain of rice to fine grit. Death occurred January 13, 1904.

Autopsy Eight Hours Later.—Body very much emaciated. Skin dry and scaley. Several hemorrhagic petechiæ on the extremities but none elsewhere.

Heart.—Atrophied. Heart muscle very friable. About one ounce of liquid in the pericardium.

Lungs.—Both about one-fourth larger than usual. More firm at the touch than normal. Mottled black and pink in appearance, black predominating. Numerous extensive and strong adhesions at the apices. So strong were these adhesions that both apices were torn off on removal. The upper three fourths of both upper lobes were jet black in color, externally as well as on section. Cavities were present in both apices, irregular in outline, that in the left apex being the larger. Projecting into the cavities were numerous calcareous bodies. Cutting through the upper lobes was like cutting through a bag of gravel. The cavities and bronchial tubes leading from them were filled with a jet black sticky material resembling the sputum during life. The lower lobes were mottled in appearance both externally and on section, resembling in appearance a section of sausage, only the colors were black and pink, the black largely predominating. Several grayish puckered areas were noted on the surface of the lungs resembling cicatrices. These places on section were invariably found to contain calcareous material jet black in color. The mediastina contained many enlarged hard (like cartilage) jet black lymph glands. There were about two ounces of liquid in the pleural cavities.

Liver.—The right lobe was slightly enlarged. No pigmentation either externally or on section. A few small black glands were noted in the folds of the peritoneum beneath the liver.

Spleen.—Slightly enlarged, but in not sense melanotic.

Stomach.—Atrophied; mucous membrane covered with mucopurulent secretion. Several hard black lymph-glands were seen along both the upper and lower borders of the stomach.

Pancreas.—Normal.

Kidneys.—Right, normal; left, movable over a radius of our inches; otherwise normal.

No black lymph glands were discovered below the region of the stomach.

Brain and osteomyelon not examined

Diagnosis.—Pneumomelanosis with tuberculosis complication.

MEDICAL PROGRESS.

MEDICINE.

Theory of Alkaptonuria.—An important observation made in that peculiar chemical malformation known as alkaptonuria, is that homogentisic acid when given by mouth is excreted as such, while the normal organism can still further decompose it. In the experiments of W. Falta (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 3 and 4), almost the entire quantity ingested could be recovered from the urine. The only other instance in which the acid could be detected in the urine was in a severe case of diabetes with absolute intolerance toward carbohydrates, for soon after the patient had taken four grams of homogentisic acid the brown color of his urine was very noticeable. In plants, tyrosin and phenylalanin are decomposed with the intermediary formation of hemogentisic acid, and the same process probably goes on in every normal animal body. With alkaptonuria, however, there is an inability on the part of the system to break up the benzol ring of the acid into simpler principles (urea, carbon dioxide and water). Little is known as to how the tyrosin and phenylalanin molecules of albumin are absorbed under normal conditions, but it seems probable that most of the tyrosin is split off in the intestines and absorbed as such while phenylalanin is absorbed as constituent of a more complex molecule. It is certain, however, that homogentisic acid is formed very soon from both. The metabolic

activity of the alkaptonuric is not abnormal with reference to the breaking down of the other constituents of the proteid molecule, and it is possible for him to remain in perfect health, despite his abnormality.

Changes in Nails in Scarlet.—Attention is directed to a new postscarlatinal symptom by E. Feer (*Münch. med. Woch.*, October 4, 1904). Four to five weeks after the onset of scarlet, at a time when desquamation is nearly completed, a transverse furrow or a distinct elevation will appear upon the root of the nails of the fingers, particularly the thumbs. As the nail grows, this furrow will advance, until at the end of five or six months it has reached the free surface. The prominence of the line is generally in direct proportion to the intensity of the eruption, and in very young children there may be difficulty in finding it. In a small percentage of cases of measles a less prominent line may also be detected, but not in other diseases. By the position of the line, it may be possible to state at what time the patient suffered from his scarlet and the scarlatinal origin of a nephritis or a rheumatism may thus be settled.

Insanity and Epilepsy in Relation to Life Insurance.—It will not be long before the great insurance companies are in possession of more reliable data bearing on the relation of certain diseases for the shortening of life than are to be found elsewhere in the archives of the medical profession. W. R. Gowers (*Lancet*, October 15, 1904), in an address delivered before the Association of Life Assurance medical officers, October 5, 1904, basing his remarks in part upon the medical experience of Dr. Claude Muirhead, from 1874 to 1894, in his experience with the Scottish Widows' Fund, in part upon his own personal observations, he said that the first practical question to be asked in the matter was whether or not any actually insane person should be considered a justifiable risk under any conditions. He believes that the answer to this is a qualified "yes." Obviously no one suffering from acute mania or melancholia can rightly be looked upon as insurable. The pitfall of making sweeping conclusions from single isolated cases had been avoided too conscientiously. Such cases have occasionally a very marked value, and he cited one in which the company made the largest relative profit of any case that it had done under the author's observation. A man, twenty-eight years of age, was insured in 1830, after he had been a resident of an asylum for twelve years. He died sixty years later, the diagnosis in the case being imbecility in consequence of epilepsy in early life. The profits on this case were $230,000 for the insurance company. Chronic imbecility, if not attended with deterioration of the vital organs, is not to be rated among afflictions which shorten life. Of the two types of idiots, the congenital and acquired, of which latter form this man was an example, Gowers believes that the acquired form is by far the better risk. Certain cases of paranoia, in which the delusions had become fixed, not only in type but in extent, are also good risks. Suicide is a factor with which insurance companies have to deal widely. It is apt to be much higher in the insane than in the sane. In Dr. Muirhead's 9,000 deaths, 127 were due to suicide. Insane heredity, curiously enough, does not seem to have any greater bearing upon suicidal probability than an ordinary neurotic family history. The conclusion of the author in regard to the bearing of family history insanity on a given risk, whose physical and mental condition at the time of examination is good, should not count for anything. The average age of 40 epileptics on entry was thirty-two years, and at exit by death forty-eight years. In only one case was there any hereditary history worth paying any attention to. Many of the cases insured by this fund probably suffered from so-called nocturnal epilepsy. Probably the chances after twenty years of age that a child of epileptic parentage will suffer from the disease are about one in fifty. When to this small ratio is added the fact that epilepsy tends to shorten life in but small degree it does not seem that family history should be entitled to any consideration whatsoever. It is different, however, with individuals in whom the disease has actually developed. Are they insurable? Frequent attacks of epilepsy should probably bar the case absolutely from insurability. Occasional attacks, however, in patients who have passed middle life, may, in chosen cases, be regarded as not constituting insuperable objections.

True or Inoculated Rabies.—Under this title a case is reported by L. Heydenreich (*Berl. klin. Woch.*, September 19, 1904) in which a doubt existed as to whether the symptoms were due to the bite of the rabid dog or to the preventive inoculations. A woman, aged forty-five years, was bitten by a young dog, which was almost immediately killed without having given any evidences of having had rabies. The patient was given Pasteur treatment, 24 injections being made within twelve days, beginning five days after the injury. On the eighth day of treatment, a series of symptoms came on, regarding which it was doubtful whether they were due to true rabies or the inoculated modified form,—malaise, nausea, slight cerebral disturbance and stupor. These increased in severity and were accompanied by obstinate constipation, paralysis of the bladder, dyspnea, mental depression, with paresis of the face, tongue and pharynx. Gradual improvement came on after a month, but then she became melancholic and finally a complete idiot, dying within ten months after the injury. It seems probable that in this case the symptoms were due to the inoculations, for the disease began to show itself within thirteen days after the bite, which is unusually early, particularly as the injury was very superficial. Another servant in the same house was more severely bitten by the same dog, but was not treated and remained perfectly well. The dog in all probability was not mad. The case is of interest because the symptoms could be traced without much question to the inoculations, and the production of such a modified form of the disease has usually been ascribed by other authors who have observed it to the character of the bite itself. The author thinks that if the treatment had been continued, so that a true immuniy was developed, the woman might have been saved.

SURGERY.

Treatment of Ununited Fracture of Neck of Femur.—It is not at all uncommon to encounter patients, either in full activity or only slightly past adult life, upon whom the most exacting limitations have been placed by this sequel of fracture. Leonard Freeman (*Annals of Surgery*, October, 1904) states that it is extraordinary, in view of the excellent results obtainable from the open operation, that so few cases are to be found recorded in the literature of the subject. It may be that one reason for the limitations on the operation is that most of the patients are very elderly, and are obviously unfit for surgical intervention. The technic of the operation centers chiefly on two points, viz., the position of the incision and the method of uniting the fragments. There can be little doubt that the anterior incision is to be much preferred to the posterior. It

should begin just below and external to the anterior superior iliac spine. It will thus lie between the sartorius and the fascia lata. The removal of the soft parts interposing between the fragments must be thorough. By the time the patient is operated on, this tissue has usually become well organized and may be highly vascular. The fixation of the fragment is the most difficult problem. One of the most important points in accomplishing this lies in securing the support of the trochanter from behind. While extension, combined with this support, will, in many cases, give excellent results, it is probably safer not to trust to these alone. Nails, screws or bone or ivory pegs may be inserted obliquely either through the original incision or through a small opening over the trochanter. These appliances, however, because of the extreme porosity of the bone, often do not hold it in place at all adequately. For this reason Parkhill suggested the use of his bone clamp. The author has devised a clamp, the efficiency of which lies in the fact that the screws bury themselves as firmly as if screwed directly into the bone. The question when to remove the supports is a difficult one. If infection occur, they should be taken out at once. In the author's own case, there was evidence of sepsis at the end of two weeks, but perfect drainage and subsidence of symptoms resulted from a removal of the screws. The majority of operators have placed the time for staying in bed at ten weeks. This is probably the minimum, because of the well-known osteoporosis, which almost invariably affects the region of the femur in these sequels of tracture of the neck.

Meckel's Diverticulum.—This interesting but inconstant remnant occurs not infrequently within the sac of external herniæ. Frank E. Bunts (*Annals of Surgery*, October, 1904) states that although the credit must be given to Johann Friederich Meckel for having called general attention to the organ, as well as for his well-known classical essay describing it, Lavater is said to have been the first to have recorded observations upon it. Ruysh in 1701 called attention to this abnormal development, which he described and illustrated in his "Thesorus Anatomicus." Morgagni in his "Seats and Causes of Disease," reports several cases of Meckel's diverticulum. It was Meckel, however, who advanced the theory that it represented the remains of the omphalomesenteric duct. While this origin of the diverticulum is generally believed, there are those who consider that it arises from the vitello-intestinal duct, and claim that it is developed as the result of traction upon the intestines by the omphalomesenteric duct. Disconnection between the duct and the gut should take place at about the third month. Rolleston has found it in 3 57-100 per cent., Osler in 2 per cent. Mitchell found it in 39 cases out of 1,635 patients examined. It is considerably more frequent in the male, only four women having occurred in Mitchell's 39 cases. It is usually present in the lower fourth of the ileum. It does not appear, however, that it is restricted with any great degree of positiveness to any particular portion of the alimentary tract, for it may be located anywhere between the esophagus and the ileocecal valve. This variation in position is explained on developmental lines. The loop from which the lower part of the duodenum, the cecum and colon are developed, is usually U-shaped. At the point of greatest convexity the duct is attached. The great length of the small gut, which subsequently develops from the upper limb of this flexure, usually places the duct in a position near the valve. Very slight variation, however, in point of attachment of the duct to the loop will at term place the duct in very widely varying positions. The length of the duct varies from a small blunt projection to a diverticulum ten inches in length. It is usually tubular, resembling the finger of a glove. The diameter is often nearly equal to that of the gut itself. Indeed Stillman states that it may exceed it. The author reports the history of a male who, presenting exidences of an ordinary strangulated inguinal hernia, was found on operation to have within the sac a strangulated Meckel's diverticulum. As it was evidently gangrenous, he resected ten centimeters of the intestine on either side and united the ends by a Murphy button. The recovery was uneventful, except that when the patient left the hospital two months later, the button had not passed.

Intestinal Exclusion.—The definition of this procedure is as follows: The term means the rendering inactive any part of the intestinal canal by surgical means. B. G. A. Moynihan (*Lancet*, October, 1904) states that examples of this exclusion are to be seen when entero-anastomosis is performed. When the intestine is cut across, the distal end closed and the proximal end united to the side of the distal. The following forms of intestinal exclusion are recognized: Entero-anastomosis of Maisonneuve; entero-anastomosis with constriction by suture of the part distal to the upper opening. Unilateral exclusion, when the gut is divided completely across and the proximal end is implanted into the side of the distal. Bilateral exclusion, when the bowel is divided at two places and the intestinal channel is restored, leaving a segment of the bowel detached. Of this segment one end may be left open and stitched to the skin, or both ends may be closed when a fistula exists in the bowel lying between them. The operation may be called for under the following conditions: Tuberculosis or simple ulcers of the intestine which have led to the formation of external fistulæ. In intestinovaginal fistula following hysterectomy, a bilateral exclusion is performed and the sequestrated loop drains into the vagina. In cholecystenterostomy, the gall-bladder is joined to the portion of the bowel cut off by unilateral exclusion. Unilateral exclusion, except in cases of disease, affecting the lower end of the ileum, offers no advantages over lateral anastomosis.

Sterilization of Rubber Gloves.—Washing rubber gloves with hot water and soap for four minutes will not disinfect them, according to the many experiments of D. Fromme and J. Gawronsky (*Münch. med. Woch.*, October 4, 1904). If, however, they are first washed in soap and water and then placed for two minutes in a sublimate solution, germs could never be found on the surface. It is perfectly safe to use the same gloves first for a septic and then an aseptic operation, provided they have no holes and the above precautions are followed. Likewise, it is not necessary to sterilize the gloves at home, since washing them on the hands directly before the operation will be perfectly sufficient.

A Predisposing Cause for Appendicitis.—The following combination of intestinal conditions is responsible for the occurrence of this disease, according to G. Rubin (*Jour. Am. Med. Ass'n*, October 29, 1904). The accumulation of gases below the ileocecal valve and their voluntary retention, the ensuing distention of the cecum and dilatation in various degrees of the cecoappendicular orifice, the entrance into the appendix of larger fecal masses than are readily expelled, the interference with the vascular circulation and resulting erosion of the mucosa of the appendix with subsequent infection. The author made some experiments with a view of corroborating the theory proposed. Portions of bowel about 50 c.c. long, including cecum and appen-

dix, where resected in cadavers of persons dead from diseases other than would affect that part of the intestinal tract. After cleansing the bowel, the colonic end was ligated, small shot, peas and beans were introduced through the ileum end and the bowel manipulated so as to imitate peristalsis. It was observed that none of the bodies entered the appendical cavity, although the appendix was held at the most pendant point. Then the bowel, still containing these materials, was inflated, and the same process of rolling repeated, with the result that in all the experiments, with one exception, the appendix was filled with shot, and in two cases peas of medium size also gained entrance. During the process of inflation, the appendix was also ballooned out, and it is reasonable to suppose that a similar phenomenon might occur in the living subject.

The Early Treatment of Clubfoot.—Most writers on this subject advise beginning treatment as early as possible, at birth or soon after. V. P. GIBNEY (*Am. Med.*, October 29, 1904) differs from this view and doubts the advisability of instituting treatment at this early stage, and prefers waiting until the child is able to walk. Appreciating the ossification periods and all the arguments advanced in favor of early treatment, yet he is not convinced that enough is gained to justify the continued interference with the nutrition of the child at the time when every effort must be directed to perfect the infant feeding and hygiene. The excoriations, strained tendons and ligaments must surely inhibit digestion, and if digestion is inhibited, nutrition cannot satisfactorily proceed. Although he declines to treat clubfoot in young infants until they are able to walk, he does not infer that nothing ought to be done during the first eighteen months. The severe forms of treatment should be mitigated, as it is well known that a large number of cases of moderately high degree are corrected by the hand of the mother. This good work should merely be supplemented by simpler forms of apparatus.

Surgical Reflections on the Diagnosis of Cancer of the Stomach.—A. G. GERSTER (*Medical Record*, October 29, 1904), appeals to general practitioners to take earlier action in case in which the suspicion of gastric carcinoma seems justified. While it is true that the technic of the excision of gastric cancer has been developed to such a degree that the mortality in the hands of some operators, such as Mayo, has been reduced to about eighteen per cent., in the direction of early diagnosis much less progress has been made. We are furthermore confronted by the dilemma that if we wait until the diagnosis is reasonably certain, especially if we delay till a palpable tumor exists, it is too late to expect cure from operation. A reliable diagnosis of cancer of the stomach in the incipient stage, in which it is susceptible of successful operative treatment, is with our present knowledge a sheer impossibility, and therefore in the case in question we must make up our minds to submit the patient to the risk of an operation before the diagnosis is firmly established. The author concludes that when in a clearly progressive case of an intractable disorder of the stomach the local and general symptoms, conscientiously collected and weighed, strongly justify the suspicion of cancer, diagnostic laparotomy should be considered not only admissible, but obligatory.

THERAPEUTICS.

Natural Mineral Waters.—It has been recognized that no chemical analysis, no matter how refined or exhaustive, can determine the exact nature of natural mineral waters, and hence it may be assumed that no artificial mineral water can ever exactly reproduce the true natural water. Years of chemical experience has shown SPRIGGE (*Lancet* Vol. V, No. 4196, 1904, p. 323) that the therapeutic results cannot be duplicated any more than the water itself be manufactured. In a series of investigations conducted in these natural mineral waters, more particularly with Apollinaris, the suggestion is made that these therapeutic differences may in part be due to minute traces of radio-active salts, which are present in many of these natural waters. High pressure and high heat in the bowels of the earth are factors that cannot be reproduced in the chemical laboratory.

Treatment of Exophthalmic Goiter.—Drug treatment for this condition having been practically exhausted, there remains for discussion the surgical treatment, which is divided into the hemisection of the gland and into section of the cervical sympathetic, and the less generally recognized serum treatment. GEORGE R. MURRAY (*Lancet*, August 27, 1904) believes that as there is no good reason for considering that Graves' disease is infective in origin, there can be no good reason why a satisfactory antiserum should not be obtainable. Rather than to prepare the serum by the method of Möbius and Portis, Murray has resorted to the simpler means of feeding rabbits on thyroid extract. He uses ordinary rabbits or Belgian hares. In a series of sera, with which he obtained admirable results, the animals were given an average of seven minims of liquor thyroidei a day from October 18 until November 20. The serum was decanted and carbolized, and the two following cases of exophthalmic goiter were treated with it: The first was a very marked example of the disease, and the patient had been subjected to every known form of treatment, including Möbius' antithyroid serum. None of these had helped her. Under Murray's serum, however, she gained in weight, and the symptoms, which had been very aggravated, became greatly mitigated. The author, however, states that it is not impossible to account for the increase in weight and general improvement from the simple fact that the patient was in the hospital. The second case was that of a girl, nineteen years of age. The serum was given for three weeks. A moderate degree of improvement was noted, so that the author was led to the conclusion that if larger animals were used, this means of preparing sera would undoubtedly be of service, especially in the treatment of very acute cases.

Quinine by Injection.—The treatment of malarial fever by the hypodermic injection of quinine has been recommended by Manson, but rarely employed. A report of its use in 18 cases is made by C. M. FLEURY (*Jour. Royal Army Med. Corps*, October, 1904). He found the most suitable preparation to be "quinina hydrochloricum acidum" of the B. P. It was readily soluble in warm distilled water,—1 minim of water taking up 1 grain of quinine. This preparation was non-irritating. He injected the solution deep into the structures below the ribs on the left side, getting in this way near to the spleen. The amount given was usually 8 grains, but in severe cases 16 were given without any bad effects. The results in almost every case were striking, and where no reaction followed the injection, it was found that the patient was suffering from some disease other than malarial fever. The cases treated

were those who had been residing in India for some time and had constant attacks of fever which failed to respond to the administration of quinine by mouth. The author claims that this is an easy and rapid method of cure, there is no headache, no buzzing in the ears, and the disease is cut short; in only a few instances were more than two injections required.

PATHOLOGY AND BACTERIOLOGY.

Vital Staining of Blood.—A new and superior method of staining blood and demonstrating some of the more delicate structures, has been discovered by H. Rosin and E. Bibergeil (*Zeitsch. f. klin Med.*, Vol. 54, Nos. 3 and 4). An alcoholic solution of an anilin dye is spread over a cover-slip with the edge of a second cover-slip so that a thin, uniform layer is obtained. When dry, a small drop of blood is spread out over the dye in the same manner and then transferred while still moist over the chamber of a hanging-drop slide and the edges hermetically sealed with vaselin. This method enables examination of the blood in very thin layer while still in a fresh or vital condition, and since no other fluid is added, the elements will preserve their shape for weeks. After twenty-four hours the erythrocytes still appear as in the fresh specimen, and after eight days the majority have undergone no change. In the second week the hemoglobin will slowly begin to dissolve. The above applies to normal and chlorotic blood, but in severe secondary or pernicious anemia a disintegration is noticed as early as the second or third day. Acid dyes attach the cells more readily than basic dyes, though eosin is generally well tolerated. Polychromatophilia is well seen, the blue dyes, such as methylene blue and methylene azur being especially well suited. It is generally stated that basophile granulation occurs only in certain pathological conditions, but by the author's method every tenth red cell approximately contains granules which are, however, more delicate than those seen with lead poisoning, etc. There is still considerable dispute as to whether the granules denote degeneration of the protoplasm or disintegration of the nucleus, but the former explanation is more probable, since a mixture of methyl green (three parts of the saturated alcoholic solution) and neutral red (two parts of the saturated alcoholic solution) applied as described above, will stain the nuclei green and the granules red. In older preparations the cell itself has often disappeared so that the granules occur free, while in leucemia the intact, extruded nucleus can often be seen. Both elements retain their behavior toward special stains even in this condition, so that it is difficult to speak of any connection between the two. In fresh specimens of blood the ameboid movement of blood platelets is very evident and an increase in number marked in leucemia. In the stained condition they present a slightly granular center and a colorless protoplasm. The latter soon swells up and forms round or oval rings, leaving behind the center in an excentric position. With eosin and methylene blue the center stains blue and exhibits red granules, which tend toward the periphery. It is probable that he platelets form independent elements of the blood which are not derived from either red or white blood cells, and which stand in intimate relation to coagulation. Similar researches on white cells are promised in a further article. A full bibliography on hematology is appended to the article.

Iodine Reaction of the Blood.—The demonstration of glycogen in the blood has been modified by A. Hirschberg (*Zeitsch f. klin. Med.*, Vol. 54, Nos. 3 and 4) as follows: A thin, uniform smear of blood is made upon a cover-slip and then placed while still moist upon the hollow of a hanging-drop slide containing a small crystal of iodine. The edges are hermetically sealed with vaselin, and the preparation then examined with the oil-immersion lens. In normal blood intracellular glycogen is occasionally found, but extracellular granules are more common and have no diagnostic importance. They are said to be increased in fractures, diabetes and severe anemia, but this is certainly not constant. In catarrhal jaundice small yellow platelets are occasionally seen which are probably blood platelets containing glycogen. The erythrocytes always contain diffuse glycogen, since they stain brown with the new method granules are never found. The intracellular granules of leucocytes never invade the nucleus but often lie grouped about it in the protoplasm. The multinuclear leucocytes are most often affected, and the statement that most cells are especially rich in glycogen is certainly not justified. All attempts to stain iodized blood films, particularly with neutral red, failed, since the iodine vapors fix the blood before the dye has had time to stain the nucleus. With the new method, positive results are often obtained where the older ones fail completely. Some doubt has recently been expressed as to whether the substance in question is readily glycogen, but the reaction toward iodine, the negative behavior toward specific dyes for amyloid, such as methylviolet and the resemblance in structure to the granules of glycogen contained in liver cells, remove all doubt. The reason why glycogen is found more frequently with infection and intoxication is because it is here changed into a less soluble form, so that it resists the action of solvents. The injection of albumin, peptone and carbohydrate, aseptic suppuration, indeed every process accompanied by emigration of the leucocytes, will have the same affect. In the hematopoietic organs, glycogen is also encountered frequently in health with the new method.

Blood-platelets in Human Blood.—The following method is recommended by E. Helder (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 3 and 4) for enumerating the blood-platelets in human blood. A special counting chamber is selected, only 0.02 millimeter high and a special pipette permitting a dilution of 1:30. The blood is diluted in this proportion with a fresh filtered solution of sodium metaphosphate, and then examined in the chamber with the high objective. An even distribution will generally be obtained of the round or oval, highly refractive bodies, whose interior generally contains an eccentric darker area, the nucleus. Their size is one-third to one-half that of the red cells. During health the average number counted was 228,000. A large number of counts were made to ascertain if the same diurnal fluctuations occur as with red and white cells, but with inconstant result. Fasting and the ingestion of food also seems to be without marked influence. In the various forms of anemia, normal or slightly increased figures were obtained. A definite relation between the time of coagulation and the number of platelets is undeniable, for in a case of purpura hemorrhagica they were exceptionally low and increased in number as the patient improved. High figures were found in moderately severe cases of tuberculosis, carcinoma, pulmonary gangrene, empyema, spondylitis posttyphosa, erysipelas, sepsis, pneumonia (after the crisis), typhoid (after the disease is over). In the latter two diseases there is a diminution throughout the course.

Renal Changes in Experimental Hemoglobinuria.—It is a well-known fact that if blood which has been rendered laky, is injected into animals, death may occur in a few minutes. At autopsy, characteristic renal changes will then be found. L. Levy (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 3 and 4) claims that these lesions are caused directly by the free hemoglobin which seems to have a specific action upon the epithelial cells of the convoluted tubules, leading to the formation of hemoglobin casts. It is an interesting fact that the same lesions are found if blood-poisons, such as toluylendiamin are injected, which goes to show that the liberated hemoglobin and not the drug itself, is the toxic agent.

On the Production of a Specific Gastrotoxic Serum.—A research was conducted by C. Bolton (*Proc. Royal Soc.*, September 28, 1904), from two points of view, namely, to add if possible any facts to the knowledge of cytotoxic action, and to throw some light upon the pathology of human gastric ulcer. The following conclusions were arrived at: On either intraperitoneal or subcutaneous injection of the stomach cells (or a fresh extract of them) of the guinea-pig into the rabbit, the blood serum of the latter becomes highly toxic for guinea-pigs. The serum leads to death on injection into the guinea-pig and causes necrosis of the mucous membrane of the stomach, leading to ulceration and hemorrhage. The toxin contained in the serum consists of at least two factors: (1) A specific gastrolysin, which leads to necrosis; (2) hemolysin which assists in producing hemorrhage. The hemolytic factor can be removed, leaving the gastrolytic, which still produces stomach lesions. The gastrolysin is a specific cytotoxin and consists of an immune body and a complement. It does not visibly affect the cells in vitro, and it does not produce necrosis in the stomach of the animal which has elaborated it, possibly owing to the concomitant formation of an anti-immune body. By injection of the stomach cells of the rabbit into the rabbit a gastrolysin is formed which causes necrosis in the guinea-pig's stomach; it therefore possesses at least two cytophilic affinities. By injection of the stomach cells of the guinea-pig into the guinea-pig a gastrolysin is formed which causes necrosis in the stomach of the rabbit; this gastrolysin is probably of a similar nature as the preceding. The importance of the above conclusions with regard to the pathology of human gastric ulcer lies in the fact that an animal can elaborate in its own blood by the absorption of the cells of a similar animal, and, therefore, presumably of its own cells, a toxin which would cause necrosis in the mucous membrane of its own stomach were it not for some deterring influence, probably the concomitant formation of an anti-immune body.

Human Blood-fluids and the Staphylococcus Pyogenes.—It had been determined by Wright and Windsor that normal human blood does not exert upon the staphylococcus any bactericidal action whatever, and that anti-staphylococcus inoculations do not lead to a development of any bactericidal power in the blood. Wright also found that phagocytosis of bacteria is dependent upon an effect exerted upon the bacteria by the blood fluids,—the bacteria being prepared by the latter, for the action of the phagocytes,—and he spoke of this effect as an opsonic effect. A. E. Wright and S. R. Douglas (*Proc. Royal Soc.*, September 28, 1904), further found that the increased phagocytic effect which is obtained with the blood of successfully immunized persons is attributable not to any modification induced in the leucocytes, but to an increased opsonic power in the blood fluids. Normal serum does not exert any characteristic agglutinating action upon the staphylococcus. Such agglutination as is obtained is not very sensibly increased under the influence of staphylococcus inoculations. A low phagocytic power and staphylococcus infection are related to each other by some fact of causation. While it is *a priori* possible that the diminished power which characterizes those infected by the staphylococcus might be the result of the staphylococcus invasion, it is infinitely more probable, in view of the entire absence of clinical symptoms in the slighter cases of staphylococcus infection, that it is the defective phagocytic power of the patient which furnishes to the staphylococcus, which is normally present upon the surface of the body, the opportunity for invading the skin. The authors studied the distribution of the opsonins in the infected organism. Wright and Lamb had found in the case of patients who had succumbed respectively to typhoid and malta fever that the amount of agglutinins in the splenic pulp is invariably less than in the circulating blood, in some instances over 200 times less. Lamb further showed in the case of monkeys examined immediately after the crisis of spirillum fever, that the splenic pulp (where the spirilla still survive after they have disappeared from the circulation) is much poorer in bactericidal and bacteriolytic substances than the circulating blood. It, therefore, appears that he *Bacillus typhosus*, the *Micrococcus melitensis* and the *Spirillus Obermeyeri*, respectively multiply and maintain their existence, within the infected organism in regions of low bacteriotropic pressure. (By "bacteriotropic pressure" is meant the mass effect exerted upon the invading bacteria by the protective substances contained in the blood-fluids). The authors assume that the lowered bacteriotrophic pressure in the nidus, where the micro-organisms are cultivating themselves, results from a retarded replacement of protective substances which are removed from the body-fluids, where these come into contact with bacteria. It may be enunciated as a proposition of general application that the invading micro-organisms cultivate themselves in the organism in regions of lowered bacteriotropic pressure. This is true with respect to staphylococcic infection.

The Action of Colloidal Silver on Toxins in the Blood.—The clinical experience that colloidal silver has a favorable action in various forms of bacteremia, has led H. J. Hamburger and M. J. Hekman (*Arch. Internat. de Physiol.*, July, 1904), to test this result by means of experimented investigation. They studied the effect of collargolum upon the hemolytic power of staphylotoxin. The addition of one-quarter cubic centimeter of a one per cent. solution of collargolum to one cubic centimeter of staphylotoxin serum, prevents hemolysis. On the other hand, doses of one-quarter cubic centimeter of collargolum in concentrations less than one per cent. 1-500, 1-1,000, etc.) to two cubic centimeters of staphylotoxin serum, increases hemolysis. Even a solution of .000001 16 gram of collargolum to 2.5 cubic centimeters of liquid has this favorable effect on hemolysis. The authors attribute the inhibitory action of the greater concentrations of collargolum to some catalytic effect.

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ASEPSIS IN SURGERY.

It is evident that surgery is as yet on the borderland only of the aseptic goal toward which she has been struggling for many years. If we are to believe, as we certainly have every reason to, the sanguine expressions of hope from the mouths and pens of the most eminent operators, the day is perhaps not far distant when we shall have actually reached the aseptic era.

The subject, however, is one to which the theory of limits is so admirably adapted that it must be conceded by all that the perfection ultimately to be reached in this matter will be in the nature of infinitesimal imperfection. That this is true is attested to by the variations in the beliefs of the men who have given the subject profound attention.

A. J. Ochsner, in the *Annals of Surgery* for October, says, "My observations have convinced me that the only form of infection which must be considered in surgery is *contact* infection. This is due to the introduction into the wound of septic material from uncleaned hands, instruments, sponges or dressings, or from speaking or breathing into the wound."

Charles Harrington, of Boston, records in the same journal that during an operation for hernia at one of the principal city hospitals he placed a sterile Petri dish about eight inches from the instruments upon the instrument table. "At the close of the operation the dish was removed and incubated. The result demonstrated that upon each square inch of the dish, and inferentially of the table, and of the instruments thereon, and presumably in the field of operation, no less than 120 organisms, chiefly pus cocci, were deposited from the air in the course of an hour. It is not for me to say how much danger may reside in such a shower of bacteria. Frankly, I do not know, nor does there seem to be any unanimity of opinion on the part of those who have investigated the question of aerial infection."

George H. Monks, in the same number of the *Annals,* remarks: "Whatever may be the actual danger of air infection, direct or indirect, and pending the results of more definite experiments, the demonstrated existence of pathogenic bacteria in the air of large hospitals is presumptive evidence of the necessity of some efforts looking toward their exclusion. Therefore, it is necessary to mop the floor . . . and to minimize drafts from all sources. It is presumably safer also to filter the air."

The conclusions reached from certain experiments with air infection, conducted under the direction of Monks, at the amphitheater of Boston City Hospital, were as follows: At no time in the twenty-four hours was the air free from organisms, the smallest number being found between midnight and seven o'clock in the morning. The vast majority of the organisms were harmless saprophytes, although in some plates of every series staphylococci were found. The streptococcus was found in two instances only.

Chicago is to be congratulated in having in the new and modern Augustana Hospital, as designed by Ochsner, a building in which surgical research can be carried on with satisfaction. Dr. Ochsner is further particularly fortunate in the fact that he has a method of training his assistants, which for perfection of detail is probably to be equaled, in the east, at least, only at the Johns Hopkins Hospital.

The system is based upon the belief that the source of wound infection can be detected only by limiting the number of persons who come in contact with anything which in turn comes in contact with the wound. The staff therefore consists of one operating nurse, one chief assistant, three second assistants, and six third assistants. The present operating nurse has been the sole

nurse assistant for the last 5,000 operations. The chief assistant holds office for three years. He is chosen from the two second assistants, whose term of service is eighteen months. These in turn are chosen from the third assistants, whose term of service is four months. The third assistants take no part in the operating.

It is indeed not to be wondered at that with such a carefully organized corps of assistants Ochsner has been able to carry on the immense amount of excellent work with which he is accredited.

It has sometimes been said, and there is no denying that much truth supports the assertion, that the spirit of surgical investigation is not rife in the city of New York. The profession here has been charged, both seriously and in jest, with commercialism and a tendency to merge the science of surgery into an art. It is not altogether the result of that well-known commercial environment which pervades everything in New York that has led to this unfortunate state of affairs.

There is, we believe, no institution in this city equipped, so far as its corps of assistants go, as well as the hospital of the Mayos', at Rochester, Minn., as the Department of Surgery at Johns Hopkins, or as the Augustana Hospital of Chicago. Why such an institution, based on the lines of these hospitals, has never sprung into being in New York has been a source of astonishment and regret to not a few.

It is to be hoped that the establishment of the Rockefeller Institute for the development of the Science of Medicine will bring into being an organization, along similar lines, for the furtherance of the science of Surgery.

A SPECIFIC PRECIPITIN REACTION IN BOTHRIOCEPHALUS INFECTIONS.

While it is quite generally held at the present time that all forms of pernicious anemia are probably the outcome of definite intoxications, this view has recommended itself especially in the interpretation of the disease accompanying parasitic infections. Experimental research in this direction has, however, been rather meager and largely confined to the study of the *Bothriocephalus* infection.

This parasite, it will be recalled, belongs to the order of tapeworms and is quite common in the lake regions of Switzerland, northern Russia, southern Scandinavia and northern Italy, where infection takes place through certain fish, which are eaten either raw or imperfectly cooked. In the United States only a relatively small number of cases have been reported in the literature, but it is quite likely that the disease is more common among the Scandinavian and Finnish population of our great lake States than is generally supposed.

Regner, in 1889, first demonstrated that the broad tapeworm, as it is also commonly called, can produce the exact clinical picture of the typical pernicious anemia, as described by Biermer, and since then his observations have been abundantly confirmed. As in the case of the hookworm infection, however, anemia does not occur in all individuals who harbor the parasite. Individual peculiarities here exist, the nature of which we are as yet in ignorance.

The first experimental proof of the genetic relationship between *Bothriocephalus* infection and the corresponding anemia was brought by Tallqvist and Schaumann, who succeeded in producing a distinct anemia in dogs by feeding with the freshly obtained tapeworms. Subsequently these same observers showed that the worm possesses distinct hemolytic properties. The most recent researches in this direction come from Kraus's clinic in Berlin and are especially interesting, as they demonstrate that the body of the host contains specific albumins, which are referable to the infecting parasite and have manifestly been absorbed. This has been proven by the demonstration of corresponding precipitins in the blood of the patient. To this end a *Bothriocephalus* extract was prepared by the autolysis of about twenty-five grams of freshly procured proglottides. On bringing one c.c. of the resulting solution together with one c.c. of the patient's blood serum a distinct precipitate then resulted, even in a dilution of the parasitic extract of 1:1,000. Normal blood serum gave no precipitate.

As confirmatory evidence that the precipitin found in the human blood serum was referable to the *Bothriocephalus* infection, a rabbit was further immunized with the worm extract and a corresponding examination made. This showed that the rabbit blood serum now also contained a precipitin, and yielded a precipitate with the worm extract in the dilution of 1:1,000.

It can thus hardly be questioned that absorption of an albuminous substance takes place which is directly derived from the worm. But

on the other hand there are no data available as yet, which would enable us to decide whether this substance is produced during the life of the organism, or whether it is a product of the autolysis of necrobiotic proglottides.

However this may be, the observation is one of great interest and suggests avenues for the investigation of some of the cryptogenetic forms of pernicious anemia also, not to speak of the anemia associated with hookworm infection, material for which is manifestly common enough in some of our Southern States.

RECENT ADVANCES IN TYPHOID FEVER.

At this season of the year, typhoid fever is always the most interesting of affections for the general practitioners of medicine throughout the country. Notwithstanding the definite knowledge that typhoid fever is an easily preventable disease, practically always water-borne, every fall sees a series of at least small epidemics in various cities throughout the country. Most of this is due to the fact that municipal politics are run for the benefit of the politician and not for the benefit of the people.

This seems to be especially the time to recall this fact, for now, with the presidential election over, most physicians will take not the slightest interest in politics, State or national, until another election approaches or, in many cases, even until another presidential election approaches. For those who bewail the unfortunate prevalence of typhoid fever every fall, it might be well to remember, or even to post up in some conspicuous place where they shall see it often, the expression of the modern sanitarian who said "whenever an individual dies of typhoid fever, some one should be hung."

In the meantime typhoid fever, like the poor, we always have with us, and so advances in our knowledge of the disease continue to be of enduring, or at least of ever-recurring interest.

One of the most recent bits of progress is the discovery that certain formamides, notably urotropin and its allies, if administered to the patient shortly before the blood specimen is taken for examination by the Widal reaction, will almost surely give rise to agglutination. Whether the patient has had typhoid fever or not, or is suffering from it at the present moment, cannot therefore be decided with any certainty if urotropin has been administered within twenty-four hours. Needless to say this, if found to be generally applicable, is of much moment. It is now fairly understood that in a certain number of so-called abortive cases of typhoid fever, in which the diagnosis has even been substantiated by a positive Widal test, the case has really been one of slight febrile disturbance, due not infrequently to intestinal indigestion, but not at all to the presence of the typhoid bacillus. The disturbing factors in the bacteriological diagnosis of such cases are probably many in number and they need further investigation.

With regard to the treatment of typhoid fever, the advances have been very limited. No new remedy has been suggested within the year that has seemed to promise to be of any enduring benefit. With regard to the feeding of typhoid fever patients, however, there has come a modification of the general persuasion as the necessity for an exclusive milk diet and a deprecation of the too great limitation of food, either in amount or variety. Liquid food is of course absolutely an indication of the disease. This need not necessarily, however, consist only of milk or even be composed mainly of milk. There are not a few persons who do not like milk, who cannot take it without a certain amount of disgust and in whom it constantly, even in health, produces a feeling of discomfort. Their digestive nature does not change because they happen to have acquired typhoid fever. It is an excellent dietary rule that declares that articles of diet which are unpleasant for the patient are not well digested and do not prove as nutritious as they otherwise would. To force such patients to take large quantities of milk is almost surely to initiate a disturbance of equilibrium of the intestines that is eminently undesirable under the pathological conditions present.

There are those who insist that not a few of the cases of persistent tympanites in typhoid fever will be found to occur in patients who have an initial dislike for milk yet have been persuaded much against their will to try and take it as an exclusive article of diet. For such cases a certain amount of milk modified in various ways by the addition of lime water, or of barley water, or of a tablespoonful of coffee to the glass may prove to be readily digested. Other liquid foods, however, such as simple soups, into which an egg has been stirred, or pea soups and various thin broths should be used frequently as a relief from the monotony of an

otherwise exclusive milk diet. Where such precautions are not taken, it sometimes happens that so little of the milk is absorbed that the good old rule of feeding a fever, announced nearly a century ago, in the face of much opposition, by Graves, fails to be followed since so little of the material taken is absorbed. The result is a loss of strength that augurs ill for the issue.

The real advance in the treatment in typhoid fever that has come consists in the prompt, surgical intervention for perforation of the intestines. Whenever a typhoid patient suffers from any sudden change, a surgeon should be called in consultation. If the change noted begins with pain, however passing the painful condition may be, then very little more is needed to justify at least exploratory laparotomy Any disturbance of pulse or of temperature in addition, should be the signal for the surgeon being placed in charge of the case and being allowed to assume the responsibility. Hesitation or delay in this matter is almost sure to be fatal. It is the old problem of appendicitis over again. A very large part of the death-rate from typhoid fever is due to perforation and at least one-half the cases can be saved by prompt surgical measures. Hence the necessity for keeping the patient at all times under the eye of a trained attendant who shall report at once any sudden change in condition. There must be no waiting until the morning visit or the risk is almost sure to be serious. In strong individuals, immediate operation will not only prove life saving, but will usually enable the patient to react so promptly that the typhoid fever will run its normal course to convalescence without any disturbance or delay.

Unfortunately there is one difficulty with regard to this very promising aspect of surgical intervention for perforation. In a certain number of reported cases all the symptoms of perforation have been present, yet at operation no perforation could be found. Later on, at autopsy, it has been found that the intestine has not been ruptured, but swelling of the mesenteric glands has occurred and that this had caused local suppuration with adhesive peritonitis affecting certain coils of the intestine and thus caused serious disturbance of peristalsis. These cases are thought to be very rare, but since attention was first called to them, every little while sees the report of another one. It is clear that where perforation cannot be found, ruptured mesenteric glands should be looked for and their contents removed as far as is possible and consistent with the patient's condition.

ECHOES AND NEWS.

NEW YORK.

The Society of Medical Jurisprudence.—The 184th Regular Meeting was held Monday evening, November 14. Charles Greene Cumston, M.D., of Boston, Mass., read the paper of the evening, entitled "Remarks on the Jurisprudence of Civil Malpractice, Based Chiefly on the Decisions Rendered by French Courts." Collation after the meeting.

Harvard Medical Society.—The Harvard Medical Society of New York City wishes to announce that Professor Theobald Smith, of Harvard University, will deliver an address upon "The Place of Research in the University Medical School," in Hosack Hall, New York Academy of Medicine, November 26, at 8:30 P.M. Members of the medical profession are cordially invited to attend.

Dr. Bolton Leaves Hartford.—The private sanatorium, established by the late Dr. C. M. Kittredge, was reopened November 1, under the direct care and supervision of Dr. James R. Bolton, formerly of the Hartford Retreat. Kingston, N. Y., is his address.

Dr. Packer at River Crest.—Dr. Flavius Packer, announces his removal to the River Crest Sanitorium, Astoria, L. I., as physician in charge.

French Hospital Open.—The new hospital of the French Benevolent Society, at 450 to 458 West Thirty-fourth Street, was opened Monday by M. Jusserand, the French Ambassador. Representatives of the Governments of Greece and Russia, and a distinguished company of Franco-Americans also were present. M. Jusserand formally declared the hospital open, after the many visitors had had an opportunity to inspect it throughout, and in the process had bought many roses at $1 each from many pretty flower girls. There was no extended speechmaking, but President Maillard, of the Benevolent Society, had a little something to say in introducing M. Jusserand. It was, in part, as follows: "We have dreamed to possess, in this great commercial metropolis of the world, a hospital establishment in keeping with France, which, if not better ordained than the one we already had to meet the necessities of growing usefulness, at least was large enough to render all the services incumbent thereupon—better provided, according to the most recent data of hygiene and the progress of science, and in accordance with the new municipal requirements always strictly to be adhered to; in short, a hospital really worthy of the French flag which we are so proud to float. What of the effort consumed? The end is attained! On new foundations, which, more solid, absorb the old ones, we have constructed a beautiful edifice, and, while meeting the needs of the present, we have perhaps more broadly than is generally done in such cases assured the future." The French Benevolent Society, in its different services, out-of-door assistance, dispensary, etc., and in its hospital, is nonsectarian, and relies purely for the support of its charities upon public donations. Most of the patients treated in the hospital are treated free of charge. To obtain the funds necessary for the new

hospital, the society, which had only about $100,000, made an appeal, and as the French Government headed the list of subscriptions with 100,000 francs, $100,000 was quickly raised. Since that subscription, a legacy and the sale of the Gobelin tapestry, also donated by the French Government, have brought the total to $225,000. The hospital has cost $400,000, leaving a mortgage of $175,000, which the Board of Administrators feel able to carry. The hospital is the third of its name, and will be open for the reception of patients on Tuesday. The first hospital was started in 1881, at 131 West Fourteenth Street, the second in 1888, at 320 and 322 West Thirty-fourth Street. The patients now there will be transferred to the new hospital, 450 to 458 West Thirty-fourth Street. The new building is seven stories in height, with a façade of red brick and limestone, and is 104 feet in length. The driveway is covered. Two floors are given up to private rooms and small wards, and two are used for the large medical and surgical wards. The operating rooms, the pathological laboratory, and the quarters of the house doctors occupy another floor. The top floor is absolutely isolated. It contains the wards for consumption and other contagious diseases.

Society for Psychic Research.—Prof. James H. Hyslop has written a long letter to the *Tribune*, setting forth the aims of the above society and asking for public contributions to aid in further investigation of psychic phenomena. He says in part: "An important institute intended to be of a national character has been founded in this city for the purpose of organizing certain scientific investigations while it conducts in one of its fields a system of philanthropic work. Its needs are the subject of this brief explanation. It has been incorporated as the American Institute for Scientific Research. It is not to be associated with any form of teaching or propagandism, whether philosophical, scientific or religious, but is modeled after the Carnegie Institution, except that it will be permanently limited to a definite field of work, comprising two more or less distinct classes of phenomena. Modeled as it is after the institution mentioned, the institute will not engage directly in investigations, but will supervise endowments and subsidies for such men and bodies of men as are qualified to conduct philanthropy and investigation in the fields which our work is to occupy. But as the two departments of work are somewhat different, only one of them offering opportunities for philanthropy, it will be necessary to consider them apart. The two fields comprehend abnormal and alleged supernormal psychology, or psychic research. As soon as possible the institute would provide a proper clinic for study and therapeutic treatment of certain types of functional mental disease, insanity, hallucination, secondary personality, and such troubles as may be made to yield to hypnotic suggestion. The type of institution here in mind is that of the Salpêtriere, under Pierre Janet, or the Clinic of Berillon, in Paris. At present it is well-nigh impossible, owing to the absurd misconception of the subject by the public, though they favor its use when other methods fail or when it is wise to employ it."

PHILADELPHIA.

Cancer Hospital Receives Charter.—A charter has been granted to the incorporators of the American Oncologic Hospital for the treatment of cancer and other tumors. Generous contributions are being made for the erection of buildings, and a committee is deciding on a site for the institution.

Celebrates 134th Birthday.—Mary McDonald, an inmate of the Home for Aged and Infirm Colored Persons, celebrated on November 14 her 134th birthday. What appear to be authoritative records confirm the age of this remarkable old lady. She has been blind for two years, but still retains many of her faculties. During the past year she has failed perceptibly, and now spends nearly all of her time in sleep.

The Schott Treatment of Diseases of the Heart and Blood Vessels.—At the Philadelphia County Medical Society, November 9, Dr. J. M. Anders gave his impression of this treatment as obtained by personal observation at Bad-Nauheim. He says that physicians abroad and in this country have only a vague idea of the proper cases for this treatment. On the whole, he was very favorably impressed by the results obtained in certain cases, and he is fully in accord with the principles of the treatment. Among the cases observed were two of acute dilatation of the heart coming on during an attack of valvulitis; in these the treatment resulted in complete restoration to the normal. A third case was one of failure of compensation in valvulitis, and a fourth was an instance of chronic valvulitis. A fifth case was an illustration of a certain class of cases in which digitalis loses its effect and after a course of the baths again exerts its action.

The Schott Treatment at Home.—Dr. James Tyson said he would employ the Schott method more often were it not for the difficulty in carrying it out at the patient's home. The baths can be used in a private house, but a helper is needed the same as for the exercises. There was for a time a man and also a woman in Philadelphia who could superintend the baths and exercises, but the demand for their services was so small that they could not continue at the work. The action of the carbonic acid is the most difficult to imitate at home. In chronic or acute dilatation, partial recoveries are obtained by the Schott treatment, and in some cases too far advanced to send to Nauheim, much good may be secured from home treatment. Dr. Tyson has not availed himself fully of the exercises, preferring to use the baths until as much good as possible has been accomplished by them, and then adding the resistance movements. The baths are contraindicated in cases of dropsy, effusions and other collections of fluid. A practical way of regulating the baths is to desist if the patient feels more uncomfortable after using them; when relief is experienced they should be continued. A very essential point is that in winter the baths should be taken in a warm room.

Technic of the Baths.—Dr. S. Solis-Cohen said there were in Philadelphia people trained in the administration of the treatment in question, and also establishments where they can be cared for. The baths can be given at home if care in the technic be employed. A good plan is to put in the tub half of the water to be employed, having this as hot as possible. The sodium bicarbonate and salt should then be put in and left for twenty minutes. Water of a temperature to make the entire amount comfortable should then be added in the required quantity and finally the acid sulphite, which will give a profuse effervescence. In this way can be obtained results almost as good as those secured at Nauheim. Dr. Cohen gives courses of six or eight

weeks, and then interrupts for eight or twelve weeks, this being followed by a repetition of the course. The baths are given at night before the patient retires, and on alternate days, the intervening days being devoted to the resistance exercises. This treatment will do good in exophthalmic goiter, but may be of great danger to the patient. In this disease, Dr. Cohen would not trust an attendant with the supervision of the treatment.

Study of the Nervous System in Congenital Deformities.—At the Pathological Society, November 10, Dr. D. J. McCarthy presented specimens taken from a puppy that was born with both hind feet turned up and in, presenting a form of clubfeet. Elaborate studies of the spinal cord have been made and later the peripheral nerves will be examined. The lumbar segment of the cord corresponding to the areas of deformity showed marked degenerative changes involving the ganglion cells and also the posterior columns. Above and below this segment were conspicuous areas of hemorrhage. Secondary degeneration above the lesion was pronounced. A noteworthy feature was that of the ganglion cells giving the reaction for iron, showing that they had absorbed hemoglobin.

Erosive Gastritis.—Dr. John Funke exhibited specimens from a case of chronic gastritis with extensive erosions. The lesions were situated mostly along the lesser curvature, and especially in the region of the pylorus. The greater number were between the folds of the mucosa; they varied from one millimeter to one centimeter in diameter, and from one to two and a half millimeters in depth. Dr. Funke does not regard this condition as a forerunner of gastric ulcer, the two being in no way dependent upon each other. Erosion of the gastric mucosa is not considered an entity, as it is, as a rule, concomitant with diseases of the mucous membrane of the stomach. The condition is analogous to ulcerative stomatitis or colitis. The erosions are not necessarily due to the action of the gastric juice, usually resulting from superficial necrosis. Areas of infection following embolism or thrombosis may undergo auto-digestion, but such occurrence is rare. The secretion of substances into the stomach may also be responsible for alterations in the mucosa.

CHICAGO.

Vaccine Virus.—Owing to the great demand for vaccine virus, which, it is said, has caused some producers to place unripe lymph on the market, the Health Commissioner has tendered to all producers of vaccine the services and facilities of the laboratory of the Health Department, and of its expert clinicians, in the bacterial and clinical examinations of all their vaccine products offered for sale and use in Chicago. All vaccine submitted for such examinations, and found to be pure—that is, free from disease-producing organisms, and potent—that is, producing not less than 90 per cent. of successful primary vaccinations—will be so certified by the Department. Defects in either respect will be duly notified.

Money for Hospitals.—The will of Moses Bensinger devises $1,000 to the Michael Reese Hospital and $500 to the Alexian Brothers' Hospital.

Diagnosis of Malignant Abdominal Tumors.—Dr. G. W. Green read a paper on this subject before a recent meeting of the North Branch of the Chicago Medical Society, in which he summarized thus: (1) It is very important for the general practitioner to be a good diagnostician of malignant abdominal tumors. (2) Know the normal anatomy of the abdominal cavity. (3) Trace all tumors to the organs from which they spring. (4) Gastric carcinoma are the most frequent malignant abdominal tumors, and spring from old unhealed ulcers, which could have been cured by a previous operation for gastric ulcer. (5) Uterine carcinoma of the cervix springs from lacerated cervices previously unrepaired. These should have been repaired. (6) If in doubt about the malignancy of any abdominal tumor, give the patient the benefit of the doubt, make an exploratory laparotomy and see.

CANADA.

Quarterly Meeting of the Ontario Board of Health.—The Ontario Board of Health was in quarterly session last week in Toronto, when it was reported that two counties were going to avail themselves of the bonus promised by the legislature to groups ot counties who would undertake to erect and maintain sanitoria for consumptives. If this is decided upon by the counties of Oxford and Waterloo, other counties will doubtless soon fall into line and Ontario will be putting up a stiff fight against the great white plague. The Board passed a resolution expressing hearty sympathy with the Canadian Association for the Prevention of Tuberculosis, which is endeavoring to secure the establishment by the Dominion Government of a sanitarium in each province. The report of the secretary for the quarter showed that there had been 412 deaths in Ontario from tuberculosis during the quarter ending September 3, an increase of 20 per cent. over the corresponding quarter of last year. The deaths from all causes totaled 5,872, compared with 5,893 for the corresponding quarter of 1903. The report also showed that here had been a marked increase in typhoid fever throughout the province during the past quarter, and a decrease in diphtheria.

Vaccination Popular in Montreal.—The Medical Health Officer of Montreal, Dr. Laberge, for 1903 shows that out of 90 cases of smallpox reported in that city during 1903, not even one person suffered from the disease who had been vaccinated during the past five years. Speaking of his report the Medical Health Officer says that it has been proven by experience in Montreal that persons who get vaccinated are practically immune from taking the disease. He also states that he has knowledge that persons who had been vaccinated when they were children, and who had contracted the disease later in life had suffered very little from it. He was glad to say also that Montreal was now a much better vaccinated city than it was many years ago. At the present time the Health Department of Montreal has the cooperation of all schools and factories in the city in order to enforce vaccination. At one time the charge was made that Montreal was a good place to go to if one wished to contract smallpox. The civic officials, who are at present going the rounds of the schools performing vaccination, report that they are meeting with no opposition, whereas two years ago, when the same officials visited the schools, there were 1,000 children who refused to attend school because they had to submit to vaccination. At the 1st of January, 1903, there were five cases of smallpox in the smallpox hospital, and there were ninety other patients admitted during 1903. The deaths number two, and there remained in the hospital on the 31st of December one patient. Of

this number admitted the males numbered 41 adults and 11 minors; females, 26 adults and 12 minors. The number of these vaccinated since five years was nil. The number vaccinated some years ago, 13, while 77 had never been vaccinated.

Montreal Endeavoring to Lessen Spread of Consumption.—The City Council of Montreal has decided to adopt the following by-law prohibiting spitting on sidewalks and in public places, having in view the object of preventing as far as possible the spread of consumption in that city. "No person shall spit upon the floor of any railway car, street car or other public conveyance, or upon the floor of any public building, theater, church, opera house, music hall or hall used for public meetings; railway or steamboat stations or waiting rooms or other public hall, building, room or place, or upon any platform surrounding, in front of, or in the immediate vicinity of any such place, or upon any sidewalk or covered way within the limits of the city of Montreal."

The Care of the Insane in Ontario.—The Provincial Secretary of Ontario, through the Inspector of Prisons and Public Charities, Dr. R. W. Bruce Smith, of Toronto, has given instructions that each jailer in the province of Ontario shall make a special report to the Department on the first day of each month giving the names of all persons confined in the jails of the province who have been certified by the jail surgeon to be insane. The sheriff of each county in the province has also been requested to make a similar return on the first of each month to the medical superintendent of the asylum for the insane for the district in which that jail is located. The Department of the provincial secretary is at the present time removing from the jails and placing in the asylums all those persons who are suitable for asylum treatment. Thus those arrested for insanity hereafter will not be forced to remain in the common jails, as there is now sufficient accommodation in the asylums of the province.

Toronto's New Consumption Hospital.—On September 2 the first patient was admitted to the Toronto Free Hospital for Consumptives, situated about ten miles from the city. Already the number admitted has attained to forty and no case is refused because of inability to pay. Building operations, however, are still in progress as the institution is not yet completed. Surrounding the hospital is an area of rising land forty acres in extent, beautifully wooded. The hospital is conducted under the auspices of the National Sanitarium Association, and will be maintained by the per diem allowance allowed by the city of Toronto, by a Government grant and private subscriptions. Dr. Allan H. Adams is the physician-in-charge.

Staff Changes in the Ontario Asylums.—Dr. R. W. Bell, second assistant physician at the Asylum for the Insane at London, Ontario, has been appointed to the position of medical inspector of the Provincial Board of Health of Ontario. His position at London has been filled by the transfer of Dr. W. C. Herriman from the Kingston Asylum, and Dr. MacNaughton, of London, has been transferred to Kingston. Dr. W. P. St. Charles, of the Mimico Asylum, has been appointed to the position of relieving officer to the public institutions of Ontario and Dr. George M. Biggs has succeeded him. Dr. W. T. Wilson, third assistant physician at the Hamilton Asylum, has been transferred to London to succeed Dr. MacNaughton.

GENERAL.

Surgeons at Pan-American Congress.—Dr. Rudolph Matas, Secretary of the Section of General Surgery for the United States, asks those who wish to contribute papers, to send titles to him at No. 2255 St. Charles Avenue, New Orleans. He also announces that the United Fruit Company's agents are offering as a special inducement to American congressists a reduction of the regular fare for the round-trip from New Orleans to the Isthmus to $50, that is, $25 each way. The steamers leave New Orleans every Friday: the last steamer to leave New Orleans in time for the opening of the Congress will sail on December 30, 1904, at 11 A.M. It takes about four and one-half days to reach Colon and seven days on the return trip on account of a stop-over at Port Limon, where ample opportunity is given to tourists to visit San Jose, the beautiful capital of Costa Rica—"the Paris of Central America"—where the most picturesque tropical scenery can be seen at this season, under the most favorable conditions.

The National Association for the Study of Epilepsy and the Care and Treatment of Epileptics.—The fourth annual meeting of this Association will be held in the Medical Library "The Fenway," Boston, Mass., on November 22. The first session will begin at 2:30 P.M., the second at 8:00 o'clock in the evening. All persons interested in the welfare of epileptics and in charity work generally, are cordially invited to attend the meetings. The following program is announced: Presidential Address, by William N. Bullard, M.D., of Boston; The State's Relation to the Epileptic, by Owen Copp, M.D., Executive Officer of the Massachusetts Board of Insanity, Boston; The Prognosis of Epilepsy, by William Alden Turner, M.D., of London, England; The Influence of Puberty and Adolescence in the Etiology of Epilepsy, by William P. Spratling, M.D., of Sonyea, N. Y.; Certain Aspects of the Differential Diagnosis Between Hysteria and Epilepsy, by Drs. Putnam and Waterman, of Boston; Some Observations on the Treatment of Epilepsy, by Daniel R. Brower, M.D., of Chicago, Ill.; Spectrum Analysis of the Blood in Epilepsy, by J. W. Wherry, M.D., of Clarinda, Iowa; Syphilitic Epilepsy, by Abner Post, M.D., of Boston; (*a*) Observations on Blood Pressure in the Epileptic, (*b*) Lantern Slide Illustrations of Cases, and of the Massachusetts Hospital for Epileptics, by Dr. Everett Flood, of Palmer, Mass.; Ten Cases on Special Treatment, by Drs. Morton and Green, of Palmer, Mass.; (*a*) Salt Poor Diet, (*b*) Reflexes in Epilepsy, (*c*) Status Epilepticus, by Dr. Morton; Lumbar Puncture in Status Epilepticus, by Dr. Morton; (*a*) Myoclonus Epilepsy, (*b*) Exhaustion Paralysis, by Dr. Hoskins, of Palmer, Mass.; Private Colonies for Epileptics, by Dr. E. A. Sharp, of New York; Duties of the State with Reference to Epileptics, by Dr. Max Mailhouse, of New Haven, Conn.; Dietary in Epilepsy, by Dr. L. P. Clark, of New York.

Tests for Cold Storage Food.—Dr. Harvey W. Wiley, the government chemist, who has discovered that nearly every kind of modern food is filled with deleterious substances, has turned now to the investigation of cold storage foods. He has on hand a fine assortment of provisions which have been for a long term in the cold storage plant of the West Point Military Academy. Dr. Wiley's idea is to give this food to one or more persons and to observe its effect upon the normal system. "In testing cold storage food, chemical analysis must be relegated to the rear," said Dr. Wiley. "The sense of taste alone can guide the expert in cold storage products. Therefore, I have made up my mind to be one of the jury of epicures to sit in judgment upon the cold storage food. What we want is a man, with a delicate memory—a man who when he takes his first bite of beefsteak that has been in the ammonia tank

for three years has an overpowering gift of remembrance which will carry him back retrospectively to an occasion when he sat down to a juicy, done to perfection tenderloin."

Beverage Statistics.—France drinks the most wine and Belgium the most beer. The United States as a consumer of spirits, beer and wine runs far behind most countries. The monthly summary of commerce and finance, issued by the Department of Commerce and Labor, says: "France shows the heaviest consumption of the most concentrated beverage spirits, viz., 2.51 gallons per inhabitant. The other countries following in the order of their per capita consumption of spirits, are: Sweden, 2.13 gallons; Germany, 2.11 gallons; Belgium, 1.42 gallons; United Kingdom, 1.38 gallons; United States, 1.33 gallons; Russia, 1.29 gallons, and Italy, .34 gallons. The figures per capita of beer consumption reveal the fact that Belgium stands at the head of the nations, its per capita consumption being 56.59 gallons; second in order is the United Kingdom, with 35.42 gallons, while Germany, which shows the largest absolute figures of consumption, in the matter of per capita consumption, takes third place, with 30.77 gallons; the United States follows with 18.04 gallons. The consumption of wine may be said to be concentrated in two countries, chiefly France and Italy. The figures of per capita consumption in these countries—34.73 gallons in France and 31.86 gallons in Italy—are almost identical with those shown for beer by the United Kingdom and Germany.

Christian Science as a Disease Spreader.—Nothing could better illustrate the truth of our frequent contention, writes the New York *Times*, that "Christian Science" is a deadly menace to every person in every community in which the cult has a single follower than did the account we printed yesterday of what has just happened up in Stamford. The facts are worth repeating: In one of the public schools there, a week ago Monday, a boy of twelve was seen by his teacher to be suffering from fever and headache and was sent home in the expectation that he would receive the care he obviously needed. He did not get it. Instead of calling a doctor or even resorting to familiar household remedies, the mother summoned an Eddyite "healer" and the two undertook to convince the boy by the usual mummery and gibberish that he wasn't and couldn't be ill. This was kept up for days until finally the neighbors, concluding from what little they could learn that the boy had diphtheria, notified the authorities of the city. Then, on Saturday, a health officer forced his way into the house against the protests of its occupants. He found the boy dying of diphtheria and two other children suffering from the disease. Further investigation showed that a child of the "healer" was also suffering from it. A doctor was then called in, but it was too late to save the boy first attacked and he died on Sunday. From Monday till Saturday not the slightest precaution had been taken to prevent the spread of infection, and no use had been made of the beneficent discovery which has in recent years reduced diphtheria mortality from about 75 per cent. to 5 or 6—among the children of parents who believe in a science that needs no quotation marks. Perhaps the boy would have died with the best of care, but his chances of recovery would have been vastly increased if his mother had been a sane woman, no matter how poor or ignorant, and Stamford would not now be threatened with a serious epidemic among its children. It is incidents like this one that cause us to be filled with angry impatience when people say that the "Christian Scientists" are an excellent, well-meaning folk, even if they are sadly mistaken in their theological and philosophical notions, and that at worst they hurt nobody except themselves. As a matter of fact, every one of them is a public enemy, threatening death to all with whom they come in contact and to many who do not go anywhere near them. Yet one of the dispatches from Stamford says, that as the Litchfield child died while under the care of a physician and the death certificate is regular, it is not likely that any proceedings will be taken!

OBITUARY.

Dr. HARRY E. ALLISON, Medical Superintendent of the Matteawan State Hospital, died at Newburg, N. Y., November 12, after an illness of three weeks. Bright's disease caused his death. He was born on December 1, 1851, at Concord, N. H., and graduated from Dartmouth in 1875. Among his classmates was Frank S. Black, ex-Governor of New York. In June, 1878, he received a degree of M.D. and became assistant physician at Willard Asylum, Ovid, N. Y. He took a postgraduate course at the New York Polyclinic, and in July, 1889, he was appointed Medical Superintendent of the State Asylum for Criminal Insane at Auburn. He was appointed a member of the commission to found a new asylum for insane criminals at Matteawan, and on its completion, in 1892, the inmates of the old Auburn asylum were transferred there. Dr. Allison became Medical Superintendent and Treasurer, and held the place until his death.

CORRESPONDENCE.

TREATMENT OF SCARLET FEVER.

To the Editor of the MEDICAL NEWS:

SIR:—Your October 29 issue contains a paper by Dr. Henry L. K. Shaw, of Albany, N. Y., on "The Treatment of Scarlet Fever with the Moser Antistreptococcus Serum," in which the statement is made that Baginsky gave Aronson's Antistreptococcus Serum a thorough trial without satisfactory effects. This is, however, an error, as Prof. Baginsky reported in the *Berliner klinische Wochenschrift*, Nos. 48 and 49, 1902, as follows: "With the new and more concentrated serum prepared by Aronson, which never produced untoward effects, the temperature fell slowly but surely even in severe cases, the patients whose condition was serious from the first finally convalesced undisturbed by complications. This improved serum was injected in 34 cases, of which two died, a mortality of six per cent.; but in view of the small number of cases not much importance is attributed to this reduced death-rate. While the serum does not exhibit the overwhelming effect of diphtheria antitoxin, its action, though slow, is sure and continuous."

Prof. Baginsky says that he used the serum only after animal experiments made by Dr. Paul Sommerfeld, of his hospital, had shown its harmlessness and efficacy. Dr. Shaw also errs in stating that "Aronson obtained a serum from the throats of scarlet fever patients, which were passed through animals until they reached a high virulence, similar to the method employed by Marmorek." Aronson's serum contains, besides the portion produced by immunizing horses with highly virulent animal-passed streptococci, another portion which cannot be computed, and which is obtained by treating horses with streptococci cultivated from severe human cases without animal passage. This differs very considerable in mode of preparation from all the sera hitherto produced.

Prof. Baginsky did not, as is stated in Dr. Shaw's report, say that "scarlet fever is primarily due to the streptococcus;" he merely says that he "found streptococci in 606 out of 701 cases and in 100 autopsies, so

that the importance of these bacteria in scarlet fever is evident." Yours respectfully,

Schering & Glatz.

New York, October 31, 1904.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-Urinary Diseases.

Stated Meeting, held October 19, 1904.

The President, James Pedersen, M.D., in the Chair.

Perineal Prostatectomy.—Dr. F. Tilden Brown presented this subject. The patient, a retired merchant, sixty-two years old, was admitted to the Presbyterian Hospital on July 14, 1904. His brother died of consumption, otherwise his family history was negative. The patient had indulged moderately in alcohol and tobacco, and had always suffered from constipation. He denied gonorrhea and syphilis. He was sexually active up to twelve years ago, but had since been impotent.

During the past ten years there had been a gradual increase in the following symptoms: Frequency of micturition, the patient now getting up three to five times at night to pass small quantities of urine. The urine cloudy, sometimes ammoniacal in odor. Difficulty in starting stream; poor force; dribbling at end. Consciousness of incomplete evacuation, with occasional burning pain during the act. Three years ago he had an attack of acute retention, which was relieved without operation. Later, double vasectomy was done at Smith's Infirmary. He was catheterized for two months afterward, and no catheter was again passed until seventeen months ago, when he had another attack of acute retention. A physician was called, who made an unsuccessful attempt at catheterization, which resulted in moderate bleeding from the urethra. The patient was then referred to the Presbyterian Hospital.

The patient was a large, strong, well-nourished man, showing no evidence of anemia. On admission he was nervous and anxious, and evidently suffering great pain. The bladder extended up to the umbilicus, and was palpable as a tense, rounded mass. Rectal examination revealed an enormously hypertrophied prostate, and bimanual examination after superpubic vesical puncture indicated that most of the tumor was intravesical. The patient had not been able to void urine for twenty-four hours. After an unsuccessful attempt to enter the bladder with catheters of various shapes and composition, a large curved trocar and canula was introduced, and about 30 ounces of brownish, somewhat turbid urine evacuated. A No. 18 F. soft catheter was introduced through the canula and left *in situ by* suturing it to the skin.

Three days after admission perineal prostatectomy was done through an inverted Y-incision. The patient made an uneventful recovery, and was discharged from the hospital on August 27. On October 18 he reported that he had passed a few calculi since leaving the hospital. He was feeling and looking well, and was urinating about every three hours. The urine was still cloudy. There was never more than three drams of residual urine. The patient's impotence had not been improved by the operation.

Dr. Brown presented another patient with this same affection, who was a stage manager by occupation, born in Italy fifty-three years ago, and was admitted to Bellevue Hospital on March 4, 1904. His family history was negative. He had always been well until his eighteenth year, when through embarrassment he would hold his urine until he could scarcely pass it. This habit persisted for about ten years. Two years ago he had an attack of retention of urine, for which he was treated at the Columbus Hospital. He was catheterized twice daily for the first three or four days, and gradually recovered control of his bladder, and could pass urine fairly well, but suffered from a burning sensation after urination. Eight days ago, after a period of constipation, he was unable to void urine, and began to have severe pain in his bladder. On his admission to Bellevue, 26 ounces of urine were withdrawn with the catheter, and 22 ounces later in the day. He occasionally passed some urine voluntarily, and without pain. Rectal examination revealed marked enlargement of each lateral lobe, with interlobular furrow. Cystoscopic examination showed very prominent lateral prostatic lobes. On March 11 perineal prostatectomy was done through an inverted Y-incision and the enlarged lateral lobes removed. A perineal drainage tube was inserted and the right half of the wound closed. The patient had an uninterrupted convalescence, and when he left the hospital, on May 5, his perineal wound was closed; he was voiding urine at normal intervals, and the catheter test showed that there was no residuum.

Suprapubic Prostatectomy.—This was the subject of Dr. Willy Meyer. The patient was a man, seventy-four years old, who came under his care last May. About two years ago he developed hematuria, which was rather persistent, and had to resort to the use of the catheter. His symptoms gradually became more aggravated, and when Dr. Meyer first saw him he was passing the catheter hourly, day and night, and still oftener. He was greatly reduced in flesh and strength, and gave a history of having had several attacks of urethral fever. For six months there had been total retention. Examination per rectum revealed pretty high up a not specially enlarged prostate, the left lobe being slightly larger than the right. The urine was strongly alkaline, and had a fetid odor. The cystoscope, which was introduced with some difficulty, disclosed papillomatous excrescences on the surface of a projecting mass above the internal urethral orifice. Whether this mass represented a tumor or a middle lobe of the prostate, could not be said with certainty. On May 12, 1904, upon opening the bladder above the pubes, a rather confusing picture was presented. There was that mass directly above the left half of the internal orifice of the urethra, sessile, with a broad base, projecting into the lumen of the bladder. On its surface appeared that papillomatous growth, with phosphatic incrustations, as seen through the cystoscope. Paquelin's cautery was used to extirpate it. Soon, however, the whitish tissue of prostatic adenomata were visible, whereupon both lobes of the prostate were shelled out with ease. The remaining cavity was packed with sterile gauze, the greater part of the vesical wound sutured, and a tube left in the bladder wound. The patient made a good recovery, excepting that between the twelfth and sixteenth day he developed a hematuria, such as occasionally followed the Bottini operation. He gained rapidly in weight, and the frequency diminished, so that he

now passed his urine every three or four hours during the day and once or twice at night. He was able to completely empty his bladder. His sexual power was preserved.

Dr. Meyer said he still is a strong advocate of the Bottini operation in certain cases of prostatic overgrowth. In the face of a good deal of opposition he had continued to do that operation for five years, the time originally set down by him for the rough trial in order to help decide whether or not it deserved a permanent place in the surgery of the prostate. During those five years he had done the operation 59 times, twice only within the last two years. As in other surgical diseases, he found that no one method was suitable to all cases. He now tried to separate them, and decide in each instance whether to operate by the perineal incision, or by the suprapubic, or by the Bottini method. Those cases where the prostate presented no tumor on rectal palpation could be best reached from above, while those in which the projection was low down could be operated on either through the perineum or above the pubes. The speaker said he believed, according to his personal experience, the Bottini operation certainly deserved a place in the surgery of the prostate, and he thought this fact had been proven by his statistics. The method should only be applied, however, to carefully selected cases. In a recent case in a man seventy years old, with frequent attacks of angina pectoris and edema of the lungs, it was considered unsafe to resort to either general or spinal anesthesia, and a Bottini operation was safely performed under local anesthesia.

Dr. Eugene Fuller, in the discussion, said he could recall two cases similar to the one reported by Dr. Meyer. In one a thick, finger-like projection of the prostate came from the upper part of the urethra and a second from below, coming together at the urethral outlet. On straining, these two masses would approximate and caused absolute retention. A calculus was found imbedded underneath the lower projection. In another case, a negro, there were three of these fleshy projecting masses, and in that instance there was a great deal of retention and phosphatic grit. In both of these cases very little prostatic enlargement could be felt through the rectum. In cases of this character, Dr. Fuller said, he thought that the suprapubic route was practically the only one that gave a chance to do thorough work. The speaker said he had done prostatectomy by the perineal method about 80 times and by the suprapublic method over 225 times. While the enlarged prostate could be removed in most instances through the perineum, the mere removal was not the only essential part of the operation. The condition of hemorrhage also had to be considered. When you had to deal with a flabby bladder, capable of holding, perhaps, a quart of blood, and without any expulsive force, in such a case, the speaker said he would not do a perineal operation, as he wished to be in a position to help such a bladder expel its contents. Under these conditions one was very apt to get passive bleeding and have trouble. He recalled such a case in which a serious hemorrhage occurred on the fifth day after the operation, and the man's life was undoubtedly saved by rapidly removing a blood-clot through the suprapubic opening.

Cystic Hydronephroma.—This was the theme of Dr. F. Kämmerer. The patient was a man, about fifty years old, who, when he was seventeen, had a severe attack of hematuria lasting two weeks. He recovered and remained perfectly well until about five or six years ago, when his present illnes began. He again had hematuria, which persisted for some time. Four years ago he entered the German Hospital, and while he was under observation there he passed no bloody urine for several months, but shortly after his discharge the attacks recurred, and peristed, with occasional intermissions. About a year ago he first noticed that his abdomen was increasing in size, and since then the bleeding has become more severe. Dr. Bierhoff made a cystoscopic examination, and established the fact that the blood issued from the left ureter.

When Dr. Kämmerer first saw the patient last June he had an immense tumor in the abdominal cavity. The entire abdomen was so tense that it was not easy to say whether it was cystic in character, as it afterward proved to be. The patient's general condition was very poor, and a blood examination showed that the hemoglobin was reduced to 40 per cent.

The usual incision for these large renal growths beginning at the spine and ending at the outer border of the rectus muscle of the affected side was made, and the peritoneum opened to determine exactly the position of the overlying colon. This was then easily pushed aside, in order to prevent any injury to the nutrient vessels of the intestines, which pass over the median surface of the kidney. It now became apparent that he had to deal with a cystic tumor connected with the left kidney. Very great difficulty was experienced in tearing away the firm adhesions of the tumor to the diaphragm. The tumor proved to be a hydronephroma, showing evidences of advanced cystic degeneration. The man made a slow but uneventful recovery from the operation.

Dr. R. Weil said that while the tumor resembled a hydronephrosis, the contents of the sac were entirely different from those met with in that condition. It was filled with a chocolate-brown fluid, Very little kidney tissue remained. The speaker said he had been able to find two exactly similar cases in the literature, and both gave the same clinical history.

Cancerous Prostate Removed by Suprapubic Incision.—This specimen was shown by Dr. Willy Meyer. The patient from whom the specimen was removed was a man of sixty years, who gave an old history of gonorrhea and syphilis. He was admitted to the hospital in the early part of March, 1904, and stated that his bladder symptoms dated back three months. He was at first unable to completely empty his bladder, and finally developed retention, so that it had to be drawn off with a catheter. He urinated about three or four times during the day, and the same number of times at night. When Dr. Meyer first saw him, a soft rubber catheter could pass without any special trouble, 150 c.c. of urine were passed, the residual urine amounted to 25 c.c. Rectal examination revealed an irregular, nodulated mass, which was so different from the usual forms of prostatic hypertrophy that, together with the cachexia and the short history, it raised the suspicion of malignancy. The cystoscopic picture also differed from the usual one of prostatic hypertrophy. The trabeculæ of the bladder wall, and the groove at the internal urethral orifice that were so characteristic of prostatic hypertrophy, were absent.

The patient was operated on May 21 of the pres-

ent year. Anterior to the bladder multiple glandular enlargements were found encroaching upon the bladder wall. After having opened the bladder, it was comparatively easy to introduce the fingers between the tumor and the rectum, and to remove the entire growth without injury to the latter organ. There was scarcely any hemorrhage. The infiltrated glands had invaded the bladder-wall to such an extent that permanent, water-tight drainage could not be instituted. The operation relieved the patient of the distressing constipation resulting from the pressure of the tumor. Death occurred in about seven weeks from pyelonephritis. Cancer of the prostate, Dr. Meyer said, was not a very rare condition, and probably often began within a benign adenoma. He emphasized the importance of early operative interference in these cases, before the growth had passed beyond the capsule. In later stages watertight suprapubic drainage, according to the Kaver-Gibson method, were the only means to ameliorate the patient's condition by a cutting operation.

Specimen of Chylous Hydrocele Fluid.—This was shown by Dr. F. Tilden Brown. The patient from whom this had been obtained was a man fifty-seven years old, a native of the West Indies, who had lived in New York for thirty years. Eighteen months ago a small stone had been removed from his bladder by litholapaxy. Following that operation, the patient complained of some pain in the left testicle, and subsequently it was noticed that the tunica vaginalis was gradually becoming distended. As there was some suspicion of syphilis—although the patient had never been treated for that disease—he was placed on potassium iodide in increasing doses. The treatment was continued for some time, but it had no effect on the scrotal tumor. The condition was then regarded as an epididymitis secondary to posturethral trauma, associated with a moderate hydrocele. An incision was made over the swelling, and upon introducing a trocar, pure milky fluid was withdrawn. Culture tests with this fluid had proven negative, and an examination of the patient's midnight blood had failed to show any *Filaria*. Under the microscope the fluid showed nothing but chyle. Dr. Brown asked to be informed if there was any other recognized cause for this condition beside the lymph vessel obstruction by the adult *Filaria Bancroftii*.

Dr. Fuller referred to a case in which a great many *Filaria* were found in the milky fluid.

The F. Tilden Brown Small-Sized Ureter-Cystoscope.—Dr. Brown also showed a No. 20 French ureter-cystoscope that he had had made specially for a child in whom it was necessary to catherize both ureters. It was made on the same line as his No. 24 French double ureter-cystoscope, but the smaller instrument took only the finest ureter catheters.

The Cystoscope as an Aid in Genito-Urinary Surgery.—By Dr. Follen Cabot. (Will appear in a subsequent issue of the Medical News.

Dr. F. M. Johnson, of Boston, Mass., said that the careful preparation of the patient, preliminary to cystoscopy, was of the utmost importance. He also advised testing the caliber of the urethra by the passage of a suitable sound before introducing the cystoscope. In order to illustrate the value of ureter-cystoscopy from a clinical standpoint, Dr. Johnson reported the case of a man who for four years had complained of almost constant pain in the region of the right kidney, from which he had been unable to get any relief, save through morphine. An examination of the urine showed that the case was apparently one of chronic catarrhal pyelonephritis, and upon introducing the cystoscope, clear, light-amber urine could be seen flowing from the orifice of the left ureter, while that from the opposite ureter was of a milky whiteness. The right ureter was catheterized, and the infected kidney treated by lavage. After four such treatments, the improvement was very marked. Microscopical findings in urine from right kidney showed a chronic nephritis probably of suppurative character. Another interesting case was that of an old soldier who had what was pronounced to be chronic and incurable Bright's disease. He complained of headache, indigestion frequent micturition and, at times, inability to walk. He had a stricture of the urethra, which was dilated; then both ureters were catheterized, and from an examination of the urine a diagnosis of chronic croupous nephritis was made. The treatment consisted of lavage of the ureters and bladder, and under this he improved rapidly. He gained ten or twelve pounds in weight, and while he was not cured, his more distressing symptoms had disappeared and he was able to return to work. Catherization and lavage of the ureters, Dr. Johnson said, if done slowly and gently, was devoid of much danger. The therapeutic value of this method, while still open to question, was well worthy of careful investigation and trial. He thought it advisable that the withdrawal of the catheter from the ureter should be accompanied by the introduction of a simple antiseptic remedial agent. In cases of chronic catarrhal pyelitis or catarrhal pyelonephritis from the irritation of an excess of urinary salts lavage of the ureters seemed to be very beneficial as an adjuvant to internal remedies. Dr. Johnson emphasized the importance of employing strict surgical precautions in doing uretercystoscopy. He had not found it necessary to use cocaine in the urethra, as gentle manipulation obviated its use. In the bladder, however, he preferred to use a one per cent. solution of cocaine, as the organ was then better able to retain the water that was put in before the operation was undertaken. Injections made into the kidney itself should be of about the same temperature as that of normal urine.

Dr. Fuller, in the discussion, said that while there was no doubt about the value of cystoscopy, some genito-urinary surgeons seemed to resort to the procedure as too much a matter of routine, while others neglected it too much. The preparation of the patient for the operation was very valuable, as the procedure became much simpler in a case where there was no tenesmus or straining, and where the urethra had become more tolerant. It was not always possible, however, to give much preliminary treatment, as many of these cases came from out of town and did not have much time. Dr. Fuller said he did not feel competent to express an opinion as to the value of medicating the pelvis of the kidney by means of catheterization of the ureters. As Dr. Johnson had said, however, the field was certainly worth investigating.

Dr. Frederic Bierhoff, in the discussion, said that while preliminary treatment for cystoscopy was not an absolute necessity, it was advisable in all cases in which it was possible to resort to it. By thorough disinfection of the parts, flushing of the bladder, and care in the use of instruments the chance of inflam-

matory reaction was greatly diminished, particularly if these patients would immediately take a hot sitz-bath on reaching home, and then go to bed. The use of moderate doses of quinine and urotropin still further diminished the tendency to reaction. One of the most important precautions was to thoroughly cleanse the cavity of the bladder and not introduce the cystoscope until the fluid returned absolutely clear. This procedure might in some cases take half an hour and prove very tedious, but the operator would be rewarded by the clearness of the picture he finally obtained. The quantity of fluid necessary to fill the bladder varied greatly between the male and the female bladder. The female bladder had a much greater capacity than that of the male, and in some cases it was necessary to inject as much as 450 or 500 c.c. of fluid. In the male, from 150 to 250 c.c. would usually be sufficient to distend the bladder and render all parts of it accessible. Too little attention, Dr. Bierhoff said, was usually paid to the light. He had never been able to adopt the so-called cold lamps, particularly in those cases where the bladder was filled with fluid. While this light looked bright enough outside the bladder, or in a bladder filled with air, it did not possess sufficient penetrative power in a bladder filled with fluid. The more brilliant the light the better were the chances to make a complete and satisfactory examination.

Dr. Bierhoff said that one of the more obscure but not infrequent conditions which we were able to recognize with the cystoscope was the bladder of tabetics. These bladders sometimes held a surprisingly large amount of residual urine. The speaker said he had seen the amount run up to 1,500 c.c. in a tabetic patient—after an attempt had been made by the patient to empty his bladder voluntarily—and this without any stricture or other cause. In some of these cases a well-marked trabecular bladder will be found, together with great dilatation, and the only explanation for this will be the spasmodic contraction of the compressor muscle. In all these cases of tabetic bladder, the cystitis was usually the first symptom that called the patient's attention to the bladder, and unless the physician kept this condition in mind, he was apt to be led astray. There were also numerous cases of bladder contraction which would escape recognition without the use of the cystoscope. The speaker said he recently reported a case of that kind in which marked vesical contraction occurred following the extension of a suppurative process from the testis to the cord and perforation of the abscess. The cystoscope was also of value in obscure cases of perirenal suppuration, in which there was a discharge of pus through the ureter.

Dr. F. Tilden Brown said he could substantiate Dr. Bierhoff's statement in regard to the presence of trabeculæ of the bladder independent of appreciable obstruction in the way of prostatic overgrowth or urethral stricture. The practice of using a large amount of fluid in the bladder, particularly the female bladder, was often a detriment rather than an advantage, because the bladder has a tendency when overweighted to fall backward and sag downward—pouching into the vagina. When this occurs the trigonum is in part or wholly below the level of the internal meatus, and then the ureters are quite inaccessible for catheterization. Dr. Brown said that the value of leaving the ureteral catheters in the ureters must be exceptional, and there were many disadvantages connected with such a procedure. The ureteral epithelium was very delicate and easily detached, and unless the greatest gentleness was exercised, the manipulations would give rise to more or less bleeding, and whether this is micro- or macroscopic a correct interpretation of the returns may be jeopardized. It was his practice to use short catheters in nearly all cases and pass them only 2½ inches, and to retain the cystoscope quietly in place while the eight to ten cubic centimeters collection of urine from each side was being caught.

Dr. Willy Meyer said he simply wished to emphasize the fact that the cystoscope had literally carried a bright light into the hitherto dark field of urinary surgery.

Dr. Winfield Ayres said that the true value of ureter-cystoscopy in its relation to the treatment of diseases of the kidney was still unknown, and opened a large field for investigation. If a catheter was left in an inflamed ureter for only fifteen or twenty minutes, it was apt to excite bleeding. In such a case the speaker said he would make his applications to the kidney as rapidly as possible, and then withdraw the catheter.

Dr. William K. Otis, in the discussion, said that the question of catheterization of the ureters had overshadowed the purpose for which the cystoscope was originally devised, viz., that of examination of the bladder. As a matter of fact, the instrument used for catheterization of the ureters was not suitable for examining the bladder, there being a strong tendency to diminish the caliber of the instrument at the expense of the optical apparatus, thus giving a small and badly illuminated field. The fundamental requisites for a good cystoscope being as large lenses as possible and as large a lamp as possible in order to give a clear, large and well illuminated picture. He himself was in the habit of employing cystoscopes of various sizes, using the largest possible in a given urethra, even as large as No. 30 F., thus obtaining a much clearer and more definite field than with the ordinary cystoscopes. As had been remarked by Dr. Bierhoff, as a preliminary measure to a successful cystoscopic examination it is exceedingly important to thoroughly cleanse the bladder, and the use of distilled water was preferable to ordinary sterilized water on account of the increased clearness of the medium.

Dr. A. V. Moschcowitz called attention to the value of uretercystoscopy in connection with cryoscopy. The freezing point of the urine from each ureter, as compared with the freezing point of the blood, would help to determine the functional capacity of the kidneys.

Drainage of a Prostatic Abscess Through the Ischiorectal Fossa. Dr. F. Tilden Brown, in the discussion on Dr. W. C. Lusk's paper, said that his experience with prostatic abscess was comparatively limited. He could only recall four or five cases, and in two of these the abscess had pursued the course which was not infrequently met with, namely, that of burrowing along the ischiorectal fossa and presenting besides the anus. The method of approaching these abscesses suggested by Dr. Lusk was a safe and comparatively easy one, and would obviate the possibility of rupture into the rectum or urethra. In some cases a urethral opening would perhaps be simpler and better.

Dr. Winfield Ayres said he had never yet met with a prostatic abscess that required opening; it had always ruptured spontaneously before he thought

it required opening. He recalled three cases that opened into the prostatic urethra, and in those the cure was exceedingly slow. In one of them three years had elapsed, and the cure was not yet complete. The other two persisted nine months or so. In one case the abscess ruptured into the rectum, and a cure was effected in less than a month. The only objection to the method proposed by Dr. Lusk was that the diagnosis was not always easy. If you made the diagnosis of an abscess deeply seated in the prostate and not close to the urethra, then it was safe to go in and open it; if, on the other hand, you made a mistake, and the abscess was located near the urethra, the relaxation of the pressure that would follow its incision would be apt to be followed by sloughing and the formation of an obstinate urethral fistula.

Dr. Edward L. Keyes, Jr., said he could only recall four cases of prostatic abscess, all dissimilar in character. In one there was a history of vesical suppuration, and a perineal section disclosed an old abscess cavity. In the second case there were several suppurating foci in the prostate, and in such a case, Dr. Keyes said, he did not think that the lateral incision suggested by Dr. Lusk would meet the requirements. This patient had an abscess pointing distinctly toward the rectum, and it was opened in that way. In this case there were two additional foci in the opposite side of the prostate, both of which opened into the urethra. This patient made a rapid recovery. The third case developed a prostatic abscess after an operation for vesical calculus. It opened into the rectum and the patient made a good recovery. In the fourth case there was a large abscess pointing toward the rectum. In opening this a perforation of the bladder wall occurred. The vesicorectal fistula closed spontaneously in six weeks without any further serious complications.

Dr. Francis Cruger Edgerton said that some months ago a man came into the Hudson Street Dispensary suffering from retention of urine. A catheter was passed, which caused a prostatic abscess to rupture into the urethra. Two or three days later he had a second attack of retention, and catheterization was again followed by rupture of the abscess. The retention again occurred, and he was finally sent to Bellevue, where the abscess ruptured for a third time. On the following day, Dr. Edgerton did a perineal section, and enlarged the opening into the urethra. The speaker said that in many of the cases he had seen, rupture into the urethra had occurred before the patients came under observation. If the method of dissection proposed by Dr. Lusk would be followed in those cases, it would be apt to result in a urethro-perineal fistula.

Dr. James Pedersen said that though the subject of prostatic abscess was generally regarded as one of minor importance, it involved many interesting points. Chief among these, he thought, was the difficulty in making a diagnosis, and therefore in deciding when to operate. He recalled four cases in which the presence of an abscess suddenly became apparent, though its presence had scarcely been suspected. On the other hand, he recalled two cases in which a well-marked abscess pointing toward the perineum had ruptured into the urethra while preparations for operation were being made. Both of these cases recovered without any complications.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

Section on Psychological Medicine.

(Continued from Page 912.)

Criminal Responsibility.—This was the title of an address by Dr. Charles Mercier, of London. On this subject he said there has been a difference of very long standing between the professions of law and medicine, a difference which he was sanguine enough to believe may be reconciled. The difference of opinion is largely due to the difference of aim, and there is little prospect of agreement until the object in view shall be the same for both parties to the dispute. It will be admitted that the legal mind approaches the question of criminal responsibility mainly and primarily with the object of protecting the community from wrongdoers; while the medical mind is apt to regard primarily, and perhaps too exclusively, the individual offender, and the justice or hardship of the punishment that is inflicted on him, and to strive for the mitigation of punishment in individual cases in which the law seems to bear with undue hardship on the criminal. The first thing to be done in order to reconcile the opponents is to show that these two objects are not necessarily antagonistic, but rather that they are two aspects of the same problem; that neither can be attained without the attainment of the other, that the complete solution of the problem would secure the attainment of both, and that the one suffers as much as the other from a faulty law, or from the faulty administration of a good law.

Moreover, he ventured to suggest that neither the protection of the community from wrong-doers, nor the protection of individual wrongdoers from excessive punishment, is the highest or the ultimate aim in dealing with criminals. Both of these, it seemed to him, are subsidiary to the attainment of a still more desirable end—the strengthening of the sense of responsibility throughout the whole community. This sense of responsibility suffers as much from an unduly severe as from an unduly negligent infliction of punishment. "Let us seek," he said, by way of illustration, "means by which we can so corrupt the conscience and debauch the mind of the man of passion who is trembling on the brink of crime, or of the man of feeble will who is tempted by circumstance, that he may deliberately cast the fear of punishment behind him, and say with eager choice, Evil! be thou my good! Could not we do so most effectually by addressing him thus? By saying to him, 'You are not as other men are. You belong to a separate class of human beings. You are marked off from the rest of your race from your birth, and are devoted and predestined to a life of crime. You are incapable of regulating your life according to the canons of rectitude: they do not apply to you. Your skull is oxycephalic; it is unsymmetrical; its frontal curve is less, and its parietal curve is greater than those of other men. Your forehead recedes; or, worse, it projects. Your chin projects; or, worse, it recedes. You have no wisdom teeth. Your ears are too large; they are too small; they are misshapen. Your hair is thick; your beard is thin. You are dark in complexion. You are unusually fair. You have a fixed look in your eye; you have a glassy stare; you look like a bird of prey; you have a singular air of *bonhomie*, you have an

angel face; you have the appearance of a wild beast: and the glance of a tiger; you have a peculiarly benevolent aspect. In addition to these stigmata, which mark you as a born criminal, you are shorter than the average; you are taller than most men. Moreover, you have tatoo marks on your arms, and perhaps on your body also. This being so, we regard you as irresponsible. You are a criminal, it is true: but the fault is not yours. It is not in the habit you have formed of yielding to your passions. It is not in your self-indulgence; your laziness; your slavery to impulse; your selfishness; your cultivated lack of self-control. No! It is impressed upon you by your inheritance. You, poor fellow, are visited with the sins of your father and grandfather, even unto the third and fourth generation of ancestry. You are a thief, a murderer, a violator, it is true: but this is not your fault. You are a criminal, as Falstaff was a coward, by instinct. In one word, you are a degenerate, and, since your crimes are no fault of yours, you shall not be punished for them. On the contrary, you shall be entertained, amused and instructed. You shall be treated with Turkish baths and massage, until your criminality departs from you. You shall exercise in a gymnasium, to the strains of a band of music, played by your fellow criminals. You are of weak mind; and therefore you shall be aesthetically cultured by a course of lectures on Chaucer, and Shakespeare, and Emerson, and Browning. You are a semi-imbecile; and therefore you shall be put through a course of Jowett's Plato. As a means of elevating your character, you shall be taught—journalism; and be provided with a newspaper to edit, whose contributors and readers shall be your fellow prisoners.'"

No, gentlemen, these are not the ravings of Bedlam; these are the teachings of the writers who call themselves criminologists, translated, out of a somewhat exuberant verbosity, into naked English.

Luxury for Criminals—Who Pays For It?—He then called the attention to the fact that these luxuries, by which the wicked man is to be turned away from his wickedness that he has committed, and made to do that which is lawful and right, do not grow spontaneously out of the ground; nor do they fall, like manna, from heaven. They are provided, for the use and delight of the criminal, by the thrift, the labor, the self-denial, of law-abiding men. If criminals and scoundrels of every order are to be thus pampered and coddled, what is to be done for the upright man, for the honest, self-restrained, law-abiding citizen, who sees, at the end of a lifetime of ill-rewarded toil and privation, borne with uncomplaining fortitude, no resting-place for his old age more luxurious than the workhouse—that workhouse which is scorned and derided by the occupants of these comfortable gaols. If the luxury of an Elmira, for instance, is not too good for the criminal, what degree of the splendor is good enough for the honest poor man, who, in the teeth of penury, has preserved his integrity? Even granting all that the fanatics of criminal pampering claim for the result of their methods—even granting that a certain small proportion of scoundrels may, by a course of Turkish baths, the lectures on English literature, and the study of Plato, be weaned, for a time at least, from a career of crime—is the game worth the candle? Is it fair, is it just to the taxpayer, often a poor man, and sometimes an honest man, that many hundreds, or it may be thousands of pounds of public money should be spent in turning a few criminals into indifferent citizens? There is joy in heaven, we are told, over one sinner that repenteth: but if the repentance were not to be secured save by an increase in the celestial income tax, it is fair to suppose that the joy would be but a mitigated and chastened felicity. But, apart from the unfairness of such a mode of treating the criminal, an even more important consequence of this doctrine of innate criminality, upon which the practice is founded, is the weakening of that sense of responsibility which it should be the aim of every system of criminal law to foster and strengthen. What will be the natural result of teaching an evildoer that his wickedness is the fault, not of his own vice, self-indulgence, dissipation and facility to temptation, but of the organization that he inherits from his ancestry? Will it not certainly be, that he will relinquish any struggles toward a better life that he may have begun, and will complacently pursue that course of crime that he is told is, for him, inevitable? A more pernicious and immoral doctrine it is difficult to imagine. For his part, he abhors and repudiates the doctrine with vehemence. Crime, as his friend Dr. Urquhart has said of drunkenness, is not a disease to be treated, but a vice to be punished. The more is it incumbent on us to see that the punishment is prompt, is certain, is apt, is adequate, and no more than adequate, to the offence. Of these elements in punishment, the majority must be left in other hands than ours. For its promptness, its certainty, its appropriateness, we must be content to trust the police, the judge and the prison authorities. The main question that we have come here to-day to discuss is, Who ought to be punished, and with how much punishment?

To the first question the answer—Wrongdoers, by which is meant, those who for their own gratification, and without justifying provocation, wilfully do harm to others. The whole gist of his argument lay in this definition; which has this advantage, that if it be accepted, it excludes from wrongness certain cases of doing harm, and provides the same criterion of responsibility, that is of liability to punishment, to both the sane and the insane.

Insanity and Responsibility.—Insanity may exonerate from punishment the man who injures another, but only by enabling him to satisfy the same condition that exonerates a sane person. In the insane as in the sane, the responsibility for guilt lies in the *animus nocendi*, or *scelerandi*. When their lordships said that "to establish a defence on the ground of insanity, it must be plearly proved that . . . the accused party was laboring under such a defect of reason . . . as not to know the nature and quality of the act he was doing," they were but saying that if from want of knowledge the *animus nocendi* was absent, the plea was established. It is true that their answer was not the general answer, that the *animus nocendi* is essential to guilt; but the particular answer, that, when this *animus* was absent from a particular cause, the prisoner is not guilty; but then it ought always to be remembered, though it never is remembered, that the judges were not asked the general question, "Under what circumstances does insanity in a criminal exonerate him from punishment," but the very restricted question, "What are the proper question to be submitted to the jury when a person afflicted with insane delusion respecting one or more subjects or persons is charged with the commission of crime, and insanity is set up as a defence?" The contention of his address was that the judges were right; that the *animus nocendi* is

essential to guilt, and that the constituents of this *animus* are contained in the definition: First, harm done, with no intention of obtaining gratification by the doing, is not wrong, and is not punishable. The difference between the salutary wound inflicted by the surgeon, and the malicious wound inflicted by the assassin, is in the respective intention of the actors, not in the consent or non-consent of the sufferer, nor in the result of the wounding. The surgeon may act without the consent of his patient, who may be unconscious from that fracture of the skull which the operator is about to trephine; yet the trephining is not wrong. Or the surgeon may do harm instead of good, and unwittingly hasten instead of retarding the fatal result of disease; still his act is not wrong, for he did not do the harm for his own gratification. But if he did the operation merely to display his skill, or to obtain practice in his art, he does wrong, even though by his operation he cures the patient. It matters not whether the intention is sane or insane; whether the skilled surgeon opens the cranium to excise a tumor, or whether a blundering madman splits the skull open to let out a headache; so long as there is no intention to gain gratification for himself by harming another, no wrong is done. Secondly, provocation or threat justifies retaliation in measure—in such measure as will prevent the threatened injury. One may stun, maim or even kill, him who is, in his firm and settled belief, about to kill him; and one's exoneration is complete, whether his belief is just and true; or whether it is a sane mistake; or whether it is an insane delusion. In either case, the *animus nocendi* is wanting. Thirdly, the harm must be done wilfully, or there is no wrong done, and therefore no wrongdoer to be punished. The law allows the principle. A prisoner is indicted, not for murder *simpliciter*, but for wilful murder. Wilful action implies and requires knowledge of the nature of the act, and of its obvious and natural consequences; and, further, implies and requires volition,—intention to do the act, and to cause, by so doing, the said consequences. If either the knowledge or the will is wanting, the act is not wilful; it is not wrong; it is not punishable.

Irresistible Impulses.—In his opinion, the doctrine of uncontrollable impulses has been invented to cover those cases in which crimes have been committed by persons who are plainly insane, but who cannot reasonably be said not to know the nature and quality and wrongness of their act; and the one doctrine has had to be stretched and distorted as much as the other in order to bring about the desired result. What has been intended when irresistible impulse has been pleaded, was not really irresistible impulse, but absence of will to do the deed—absence of that *animus nocendi* which is necessary to wrongdoing. Irresistible impulse, in the technical sense of a sudden outburst of maniacal violence, so rarely comes within the purview of a court of law, that, with a pretty extensive acquaintance with the subject, he was unable to cite a single case. The only case in which irresistible coercion of the will can properly be pleaded, is the case of obsession; and in this case, the act is not necessarily impulsive in the technical sense, although it must be regarded as irresistible. Obsession is a terrible malady. It is rightly regarded with suspicion and distrust by jurists, anxious to maintain the standard of individual responsibility; but of its existence there is not a shadow of a doubt, and in any given case, this existence is to be proved to the satisfaction of the Court by evidence given according to the ordinary rules. Doctors practising in insanity are, not seldom, consulted by persons, who complain, with the greatest distress, that they feel a horrible impulsion to do some act which is utterly abhorrent to them: to set fire, it may be, to their own property; to kill, it may be themselves, it may be those dearest to them. Against this impulsion they struggle with dismay and with horror. Sometimes they overcome it, and it fades away. Often they place themselves voluntarily under control in asylums to keep themselves out of temptation. Occasionally they apply to the police to be forcibly restrained. Sometimes they succumb, and the deed is done. In this last case, should they be punished? Such cases rarely, however, occur in criminal courts. Much more frequent are cases of another kind, in which, while knowledge of the wrongness of the act is present, the *animus nocendi* is absent, from want of will to do harm. For how many generations has the act of Virginius, in killing his daughter to save her from a fate worse than death, been applauded by the moral sense of mankind? How many times has it not been emulated by officers of our own army, whose womenfolk have been on the point of falling into the hands of savage foes? Cases in which children are killed by their parents, wives by their husbands, on a motive similar in character but insane, are very frequent in our courts. It was in such a case that that great judge, Lord Blackburn, finding that the prisoner could not be exonerated on the ground of not knowing that her act was wrong, told the jury that there were exceptional cases: a doctrine scarcely satisfactory if such cases were rare; but surely to be deprecated when they are very frequent. The application of the rule, that the *animus nocendi* is essential to guilt, would render it unnecessary to treat such cases as exceptional. The will and intention of the actors is, not to harm the victims, but to do them good. They are killed in order that they may be benefited. Of alternative evils, believed to threaten them, the less is chosen for them: and, the *animus nocendi* being absent, the actor, whether sane or insane, should not be punished.

The advantages of the course which he advocated, he said, were many. It introduces no new principle of law; it demands no legislation; it needs no definition of insanity; it does not disturb the famous answers of the judges; and it can be applied to every case, without stretching the principle, without straining or distorting the plain meaning of the language in which it is expressed. All that is needed is that the charge in the indictment should be proved or not proved; that when a prisoner is charged with wilful wrongdoing, he shall not be punished if the wrongdoing was not wilful.

The Legal Point of View.—Sir Herbert Stephen Burt said that, having read the abstract of Dr. Mercier's paper, he found himself in almost complete agreement with it. In illustration of what he, as a lawyer concerned in the administration of criminal law, conceived to be the principles there enunciated, he offered the following observations: I. The question whether or not there existed what was called a "criminal neurosis"—by which phrase he understood a set of peculiarities of bodily construction, which in concurrence were always or generally accompanied by a strong disposition to commit crimes—was a question not of law, but of medicine. All he had to say upon it was: (1) That, following the opinions he had heard expressed by Dr. Maudesley and Dr

Mercier, he did not believe it existed; (2) that if its existence were, in his judgment, proved, or decidedly probable, he should allow medical evidence to be given that a person accused of crime had a criminal neurosis, and should advise juries that this was evidence (strong or otherwise, according to circumstances) tending to prove the accused person to be guilty; (3) he should further regard the condition of criminal neurosis in convicted criminals as a reason for depriving them of their liberty to commit crimes for as long a period as seemed convenient, subject to their treatment being as little injurious to them as was consistent with public policy.

II. He believed that the point which it was essential to understand for the proper legal treatment of insane persons who committed crimes was that some criminals who were insane should nevertheless be treated as criminals—though it might frequently, or even usually, happen that their insanity should be considered a reason for mitigating the severity of their punishment. In explanation of this belief he offered a few remarks concerning cases of crime committed by persons suffering from insanity of different kinds, which ought to have—and in English law substantially did—lead to different results.

A. A case of which he had to do with several examples was that where a person suffering from some disease classed as epilepsy killed some one, generally a friend or lover, often in the presence of several persons, and almost always by cutting the throat. In these cases is appeared probable, as far as could be discovered, that the epileptic had no subsequent memory of the act of killing, or, in a minority of the cases, had only a faint and clouded memory like the memory of a dream. In these cases it seemed clear that only physical restraint (and probably very strong physical restraint) at the critical moment of the seizure would have prevented the killing; also that the act was unaccompanied by anything that could properly be called consciousness. It appears to him that those who did these more or less unconscious acts ought not to be punished therefor, but ought to be regarded as unfortunate instruments in a misfortune, as a man would usually be regarded who accidentally killed another by convulsive movements caused by a nightmare or a fit of delirium. He thought they ought to be treated merely medically, and should suffer no more restraint than was necessary as a precaution against a recurrence of the epileptic attack.

B. An example of a different class of acts of insane persons occurred in the constantly-recurring case where a woman—generally soon after pregnancy—killed her own child, oftener by drowning than in any other manner, but also not infrequently by cutting. In these cases, as well as could be discovered, she knew that she was killing the child, and meant to kill it, and did so because, being passionately fond of it, she had an obsession of mind sufficiently abnormal to be called insane, to the effect that death was highly desirable for the child. In these cases, as a rule, the woman could, when the mental obsession had passed off, remember what she had done, and deeply regretted having done it, but remembered also the thoughts which made her do it. He did not consider mere punishment suitable for such cases as these, but he thought there should, in any event, and irrespectively of the health of the sufferer, be a considerable period of enforced seclusion and submission to some form of discipline, because although the patient's knowledge of what she was doing, and of its general nature, was entirely overcome for the moment by the violence of her mental obsession it was never entirely suspended as in the cases in Class A. He judged this kind of mental obsession to be a thing against which the sufferer could and ought to have struggled, though the struggle in many cases might prove ineffective.

C. A third sort of case which came before the criminal courts rather less frequently than the two he had discussed was where the insane affection of the mind was a much more remote cause of the crime. Again, he took homicide as an example, because it was almost always in cases of homicide—and generally of murder—that these questions arise. In this class of case the patient, in consequence of a morbid affection of the mind, conceived a violent hostility towards some person who might be reasonably deserving of hostility to a considerable extent, or to a moderate extent, or not at all. The insane man, then, in gratification of his hostility, proceeded to murder his victim, employing for that purpose all the intellectual resources of the sane. He showed premeditation, care, resolution, and skill in arranging for his own escape. There was no reason to doubt that he knew as well as possible that he was committing murder, that murder was sinful, and a crime, and that he might be punished if he were caught. His immediate motive was hatred, and cruelty and treachery were probably features in his action, just as if he had been sane. The actual existence of all the provocation that he might conceive himself to have had would not in the least have affected either the immorality or the illegality of his act. He thought that insane criminals belonging to this class ought to be punished. He would treat them not as invalids unfortunately concerned in crime, but as criminals who happened to be suffering from a disease, which might or might not be a reason for mitigating the severity of their punishment. In some cases—though not very many—he thought the full penalty for the offence should follow the conviction, exactly as if the offender were perfectly sane. In others, where the extent of morbid delusion and insane behavior appeared to be comparatively great, he thought that conviction for crime should follow the offence, but that the punishment should be mitigated. He included in this class the cases where mental disorder amounting to insanity was the originating cause of criminal indulgence of the sexual passion, whether the resulting crime was murder or rape. He could not recall a case of an insane person tried for a crime of this character in which it did not appear that he knew perfectly well what he was about. He was inclined to think, after twenty-years' experience of the administration of criminal justice in England, that the above category of criminal acts committed by insane persons was practically exhaustive.

(To be Continued.)

BOOKS RECEIVED.

Text-Book of Nervous Diseases and Psychiatry. By Dr. Chas. L. Dana. Sixth Edition. 8vo, 690 pages. Illustrated. Wm. Wood & Co., New York.

Refraction and How to Refract. By Dr. Jas. Thorington. Third Edition. 12mo, 314 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

A Treatise on Obstetrics. By Dr. E. P. Davis. Second Edition. 8vo, 800 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

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ORIGINAL ARTICLES.

OPERATIVE TREATMENT OF RETROVERSION AND RETROFLEXION OF THE UTERUS.

BY WALTER A. JAYNE, M.D.,
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ASIDE from operations for the repair of injuries of the pelvic floor, which Emmet, that master of gynecologic plastic surgery, insisted were sufficient for the relief of retrodisplacements of the uterus, and which are accepted by all surgeons as an essential part of any procedure for their correction, all methods suggested for cases of retrodisplacements such as come to the operating table, are found on analysis to consist of either shortening of ligaments or creating new attachments. Omitting, for present purposes, these obviously necessary plastic operations and confining our review to those procedures designed to control directly the position of the uterus, we find that a few only have met with any general favor or merit serious attention.

Operations by the vaginal route are now reported and discussed so seldom as to leave the impression that whatever vogue they had at one time is now passed. The principles upon which they were based were never accepted as sound, and they received their support largely because of the avoidance of external scar, and the supposed greater safety in attacking the intraperitoneal disease complicating these displacements by the vaginal rather than by the suprapubic route. The difficulties in the performance of delicate and often complicated intraperitoneal operations through the vagina, guided largely by the sense of touch only, and the not infrequently resulting accidental injury of neighboring organs, deterred many operators; and when it became known that grave dystocia followed in very many of the cases becoming pregnant after the various operations of vaginal and vesical fixation, these procedures came to be regarded with positive disfavor except by a few. The therapeutic results of vaginal operations, including the shortening of the round ligament through the anterior fornix, did not appear to be any better than by other methods, and when the technic of abdominal operations had been so far improved that the suprapubic route, open to the eye, was demonstrated to be safer from operative accidents, and as safe or even safer from postoperative complications, the *raison d'être* of the vaginal route disappeared and apparently very few still practise these methods.

It has been frequently noted that the tissues of the upper layer of the pelvic diaphragm adjacent to the uterus are relaxed, permitting the cervix to drop, and favor a backward displacement. Laudable efforts have been made from time to time to correct this condition and maintain the cervix at a higher level by plastic operations; by creating adhesions in Douglas's cul-de-sac, or by shortening the uterosacral ligaments from above or through the vagina. These efforts have been more or less desultory, and the success following the methods pursued has not been so marked as to attract any general attention or inspire confidence. This pathological condition, though important at present, appears to be either not diagnosed or, when recognized, ignored by most operators. When a satisfactory technic for its correction is developed, the operation may easily prove a most important auxiliary to other procedures, even if it cannot be depended upon as a sole reliance.

The shortening of the round ligament through superficial incisions in the groins, commonly known as the Alexander operation (though others deserve much of the credit for it), performed after various methods in minor detail, has been under consideration and practised for twenty years. The acknowledged advantage of being an external operation, with no risk of peritoneal complications or to life; of utilizing normal ligament (and the strong fleshy part of it) to retain the uterus in position in a physiological manner, involving no interference with the normal progress of pregnancy and labor, combined with a high degree of efficiency, have caused its adoption by many operators for that limited class of cases for which it is applicable.

Objection is made to this operation that the round ligaments normally have little influence, if any, in preserving the anterior position of the uterus; that they are occasionally absent, are not easily found, and are often so slender as to break in withdrawal, necessitating other operation; that suppuration and sloughing are liable to render the procedure valueless; that hernia not infrequently results; that the operation is not an efficient cure and does not stand the supreme test of pregnancy, and finally, that the scars are an offense. Those who have gained sufficient familiarity with it to cope successfully with its acknowledged technical difficulties reply that while these objections are occasionally valid, unfortunate results as due to inexperience or accident and avoidable, rather than an essential defect of the operation in principle. They contend that the ligaments, if absent at all, as is questioned are in fact absent in so few cases, as to make that contingency not worthy of account, and that with care they should not break; that suppuration and sloughing are due to defective technic, too much dissection and bruising of tissue, or tying the

ligatures too tight; that hernias may be avoided by properly placing the sutures and closing the canal; that in practice the ligament is efficient in retaining the uterus, and relapses are uncommon, even after parturition; that the scars are small, insignificant, and scarcely noticeable after a few months, and finally, it is claimed, the records do not show a single case of complication of pregnancy or labor attributable to the operation. The successful Alexander would therefore appear to be an ideal operation for these uncomplicated cases during the child-bearing period.

Efforts have been made to extend the advantages of this operation to displacements complicated by the minor forms of disease of the appendages by dealing with them through the internal abdominal ring after enlarging it. A number of successful cases have been reported, but the suggestion is too recent to permit of a judgment upon its relative value or the possibility of safeguarding against hernia.

When these displacements are complicated by conditions requiring abdominal section, it is the accepted opinion that some intra-abdominal method should be selected for their relief; and the choice lies between some operation upon the normal ligaments or creating a new attachment of the uterus.

Those who believe in the desirability of using the round ligament for holding the uterus forward have endeavored to make it efficient by folding and shortening, or by creating a new attachment between it and the anterior abdominal wall, or to the uterus, anteriorly or posteriorly, and incidentally shortening it. Some of these operations have been performed over a period covering a number of years and have been regarded as fairly efficient; yet, looking back, it would appear that even those procedures regarded with the most favor have been utilized largely as a makeshift to avoid the attachment of the uterus to the anterior abdominal wall, rather than because of the confidence felt in the method, either as originally proposed or as modified from time to time. All these intra-abdominal operations on the round ligament, in common with the external shortening of these ligaments, already mentioned, have the advantage of not interfering with the normal progress of pregnancy and labor. With one or two exceptions, to be mentioned later, these operations have depended for their permanency and success upon the slender, weaker part of the ligament as it passes through the inguinal canal rather than upon the fleshy, stronger, intra-abdominal portion, and upon the continued integrity of adventitious tissue, the adhesions between the folds of the ligament or at its new attachment, usualy peritoneal. These facts, in the absence of satisfactory reports of final results, have caused distrust of the real and permanent value of these operations, however successful the primary result, and a suspicion exists that relapses are common. For these reasons many who preferred the use of the round ligament in principle have, in the absence of a procedure which could be regarded as sound and reliable, accepted and practised the attachment of the uterus to the anterior abdominal wall as offering the best solution of the problem.

For others, suturing the fundus of the uterus to the anterior abdominal wall has been the operation of choice, and being simple in performance, efficient, and withal so quickly done as not to prolong a section materially, even when accompanied by shock, it has deservedly been held in the greatest favor by the majority of surgeons; and by many it has been used for those simple, uncomplicated cases not otherwise calling for section, and for which the operations of the Alexander type have been held to be particularly applicable.

The firm attachment of ventral fixation, as first practised, was soon found to interfere seriously with the normal development of the uterus during subsequent pregnancies, inducing various complications, among them abortion and dystocia in a very considerable proportion of cases. To avoid these complications, the slighter peritoneal adhesion of suspension of the uterus has been substitued, except possibly for patients approaching or past the menopause, without expectation of future pregnancy, or those physically sterile. It is urged that the adhesion, however slight, is an abnormal one, and occasionally gives rise to more or less annoying symptoms or grave complications. Reports go to show that even in the hands of competent men, with every care in technic, its character cannot always be so limited as to insure a sufficient mobility of the uterus to admit of its full physiological development during gestation and avoidance of complications in labor. The connecting band is of adventitious tissue, and while, if slender, it may easily stretch during pregnancy, it is admitted that it cannot be depended upon after labor to undergo coincident involution to such an extent as to be again efficient and insure against relapse. The operation is popular, and for years it has been the one most commonly applied in abdominal cases. Its advocates direct attention to the very large number of cases showing no untoward symptoms, yet the fact remains that cases are occasionally reported in which unfortunate results have followed, demonstrating that the disadvantages above mentioned are positive in a certain, though possibly small number of instances, and at least are not so significant as to be ignored. The autoplastic operation, with the use of peritoneal membrane to retain the uterus, has been tried, but with what relative value is not yet clear.

Whatever opinion may ultimately be held regarding the relative value of shortening the round ligaments in the groins and suspension of the uterus for cases of uncomplicated retrodisplacements, the value and efficiency of the fleshy inner portion of the ligament, as utilized in the Alexander operation, appears to be generally rec-

ognized, and attempts are being made to extend its use. Methods have quite recently been proposed of attaching a loop of the intra-abdominal portion of these ligaments to the anterior abdominal wall more firmly than by the peritoneal adhesions formerly depended upon, by threading a loop through a small wound in the peritoneum, muscle and fascia on either side of the median abdominal incision, and fixing it by suture, thus suspending the uterus by the strongest portion of the ligaments and imitating as nearly as possible in intra-abdominal work the result following the Alexander. Should experience show operations of this type to be free from postoperative objections and quickly performed, they may offer a ready means of correcting these displacements in cases in which abdominal section is required in a safer, more physiological and efficient manner than heretofore suggested, and go far toward giving a satisfactory substitute for attachment of the fundus to the anterior abdominal wall, especially for women in the childbearing period of life.

STONE IN THE KIDNEY; ITS DIAGNOSIS AND OPERATIVE TREATMENT.[1]

BY JOSEPH RANSOHOFF, M.D., F.R.C.S. (ENG.),
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Twenty-five years ago a formal operation for stone in the kidney was unknown. Since Morris recorded his first case, a little over twenty years ago, the entire subject of nephrolithiasis has been so thoroughly developed that in any single paper of conventional length only a few points of special interest can be touched upon.

I intend, therefore, to beg your attention to the consideration of certain phases of diagnosis and indications for operative treatment. With the rapid strides that have been made in our diagnostic methods of studying the kidney, few cases are now operated upon for stone with a negative result. Nevertheless, the elating thrill which the surgeon expects to experience, when the finger touches the stone in the opened kidney, is not always felt. In its place is chagrin if not discomfiture, when the fullest search fails to reveal the object sought for. To whom has it not occurred? A few years ago the writer saw one of the foremost specialists in kidney surgery fail to find a stone in two cases within ten days. That a kidney may harbor a stone without giving rise to symptoms is now and then shown in the mortuary. A stone, even of large size, may be carried about for many years and led to destruction of the kidney by suppuration, and still give no sign of its presence.

I beg to present this stone, weighing over one ounce, removed, with the kidney, from a man of twenty-one years, four years ago. With the exception of one day spent in bed after an injury sustained while playing baseball, the patient had never known a day's illness. A large lumbar abscess formed and opened spontaneously while the patient was walking about. The sudden discharge was the first intimation that he had of anything wrong. He sought relief from the annoying fistula in the loin. Until his attention was called to the almost milky appearance of his urine, he did not know that anything was wrong about it. Similar cases have been recorded, but they certainly are very rare.

Until the technic of radiography was brought to its nearly perfected state, every surgeon who often operated on the kidney met with occasional disappointments. Even to-day, as has already been intimated, errors in diagnosis will occasianally be incurred. Two questions, necessarily correlated, at once arise, the solution of which would remove the obloquy attending a seemingly fruitless if not hazardous operation. They are: First: Have we any positive and absolute method of recognizing stone in the kidney? And second: Are there any other pathological conditions in the kidney, the symptoms-complex of which cover to a nicety that of stone? In every case of suspected stone, the symptoms should be studied, and perhaps a presumptive diagnosis made before resort to radiography is made.

In a broad way the symptoms may be divided into two great groups: (1) Those due to the supposed passage of the stone through the ureter,—the renal colic proper; and (2) those due to processes constantly at work in the kidney because of its containing a stone, a condition of chronic nephrolithiasis.

As an element of diagnosis, the kidney colic *per se* is largely overrated. In a very large number of cases of kidney stone there is no renal colic from beginning to end. It is supposed to depend upon the passage of a stone through the ureter. Many times the corpus delictum is voided in the natural way. These are the cases that do not ordinarily require surgical intervention. When it is remembered that many stones are fixed in the kidney, that only comparatively small stones can get into the ureter, and that smooth bodies like the ureteral catheter are tolerated for long periods without inducing pain, it must at once become evident that for many cases we must seek another explanation of so-called renal colic than the spasmodic contraction of the ureter.

A small stone comes into the bladder from the kidney, becoming the nucleus of a large stone or is voided without having ever produced a renal colic. That sharp or irregular stones in their passage produce pain there can be no question, but the explanation of the pain must be sought in the occlusion of the ureter, usually the upper part of its course, and the consequent increase of the tension of all the structures contained within the kidney capsule proper. A tumor of the kidney suddenly growing into the pelvis, the entrance of a mass of tuberculous detritus into the upper ureteral orifice, a twist of the ureter or a movable kidney, may each produce symptoms

[1] Address delivered before the Kansas City Medical Society.

which cannot be distinguished from those usually ascribed to the passing of a stone. Furthermore, increased intracapsular tension without obstruction of the outflow from the pelvis will often produce pains closely simulating renal colic. Very acute congestions of the kidney with hemorrhage into the parenchyma, acute exacerbations of the tuberculous processes, and, above all, acute venous congestions in chronic nephritis, not infrequently limited to one kidney, may give rise to pains that might be classed with renal colic. That a renal colic may be simulated by a temporarily impacted gall-stone is of general knowledge. Even with a successful skiagram showing a stone, the differential diagnosis is at times impossible.

Dr. Barnett (*Annals of Surgery*, vol. 37, page 36), well illustrates a case of this kind. Every surgeon has been called upon to do an interval appendectomy in the presence of a kidney stone. In the latter condition there is very often great tenderness over the crossing point of the ureter and the pelvic brim, and in cases of appendicitis developing toward the pelvis I have even seen such strangury as is usually associated with urinary disease. Morgagni already recognized the fact that inflammatory conditions of the kidney cause symptoms which closely resemble those of disease of the bladder. Rovsing remarks that since he has used the cystoscope, his cases of cystitis have been reduced 50 per cent.

Our more positive methods of recognizing stone should not lessen our attention to the urine. A careful investigation of quantity, composition and search for the presence of formed elements continued for weeks will rarely fail to point to or from the kidney as the site of the lesion.

With the close of the colic, or in its absence, there comes up for consideration the second, and, in my judgment, the more important symptom group, that of chronic nephrolithiasis. When the stone is firmly fixed in the kidney and away from the pelvis and the ureter, we may have to depend on it entirely. Pain, spontaneous or elicited by pressure, changes in the urine and the frequency of its expulsion are the general symptoms indicative of progressive aseptic changes in the kidney before it has come to palpable enlargement. While not one of them is in any sense pathognomonic, their grouping is such that a correct diagnosis can generally be arrived at. Of greater diagnostic import than spontaneous pain is that elicited by pressure. Bimanual examination, the patient lying on the sound side, will cause a sharp pain in the region of the kidney, or the course of the ureter, when the patient takes a very deep inspiration. Tapping the kidney after the manner of Mr. Lloyd, is an excellent adjuvant. For purposes of comparison, I have long been in the habit of examining my patient, while he stoops over before me resting his hands on a chair. With the extended fingers placed over the lateral costo-iliac interval, I make simultaneous and equal pressure with my thumbs along the lower borders of the last ribs from end to end. I know of no way in which pressure tenderness due to a stone can be better elicited. It is far more acute than that caused in the first stages of tuberculosis and renal tumors.

The urine in chronic nephrolithiasis presents abnormal elements which afford perhaps the most valuable single guide to diagnosis. I allude to the persistent presence of microscopic hematuria. Almost every specimen examined during a period of months will contain from one to twenty red cells in the field. If not easily found in one or two examinations, violent exercise will produce microscopical bleeding. This feature is of special importance, since the urine to the naked eye is seemingly normal. Even under the microscope the blood cells are often detected with difficulty, because of their decolorization; often they are little more than shadows. In a paper read eleven years ago, I directed attention to this important point in the diagnosis of kidney stone, and my experience since has emphasized its value. By itself it is the most valuable sign of nephrolithiasis. In this connection the relative number of white cells is important, since in aseptic nephrolithiasis they are few, whereas in the tubercular they are always numerous. Until pyelitis has developed, the preponderance of the red cells over the leucocytes, as found in the urine, is like that of normal blood.

Crystals in the urine, as indicative of stone and of its composition, are of very little diagnostic value. To be of any value at all the crystals must be found in the urine immediately after it is voided.

Except when a stone is in process of growth, crystals can hardly be expected. In fact, the patient with kidney stone rarely gives the history of having passed sand with his urine. In several of my cases very accurate examinations were made over protracted periods with negative results. In connection with urinalysis it is, of course, essential to determine the quantity and the presence of albumin. Likewise is it important to make a rigid search for casts, for in many cases where operations have been performed with negative results chronic nephritis with acute hyperemias have been found, at times unilateral, as already indicated above.

The temperature chart in nephrolithiasis is of secondary importance. In a few of my cases the colic itself was associated with fever and that without suppurative infection. As in cases of common duct, stones without suppuration in the duct or the gall-bladder, elevations of temperature occur, so it is in impaction of a renal calculus. In the chronic state of nephrolithiasis, on the other hand, slight elevations of temperature continued through a long period and with a distinct tendency to recur irrespective of any renal colic, are a most important element in the diagnosis. How these septic changes in the kidney occur about a stone is fairly well known. It does

not necessarily mean a pyelonephrosis with enlargement of the kidney sufficient to make it easily detectable. Even when dislocated into the wound for the removal of a stone, such a kidney with pyelitis and slight distention of the pelvis may not seem notably enlarged. When the kidney is greatly enlarged and has become converted into a pus sac, the diagnosis of stone is of secondary importance. All cases of pyonephrosis with sacculation present practically the same symptoms with the exception of those in which tuberculosis is the underlying factor.

Given the diagnosis of renal calculus, it is perhaps possible to differentiate parenchymal stones from those in the pelvis, but it is not possible to differentiate the latter from stones in the ureter. The X-ray has shown that perhaps 20 per cent. of stones are in the ureter, all of the symptoms indicating a higher site. This must account in part for the frequency with which stones were not found before radiography was used. In one of my earlier cases a most careful search of the kidney by splitting it failed to reveal a stone. Nine weeks after the operation, the patient passed a small ureteral calculus and was relieved of his symptoms.

The newer methods of cystoscopic, ureteral examination and separation of the urines, is of less significance in the therapy of kidney stone than in other surgical affections of the kidney requiring operation, since nephrectomy practically is never justified as a first operation for kidney stone. The cystoscope gives us invaluable data in determining in the first place that the bladder is free of primary disease, and frequently it shows us by an abnormal condition of the ureteral opening which kidney harbors a stone. The use of a wax-tipped ureteral bougie, as suggested by Kelly, will occasionally give a positive result, but it is a chance on which little reliance can be placed. Albers-Schönberg has shown in a number of cases that the ureter would permit a catheter to pass, although it contained one or more stones. Bierhoff has recently suggested filling the renal pelvis with a solution of boracic acid, which displaces a stone if present. The procedure is followed by a slight hematuria, which he considered positive. He cites four cases.

How perfectly a positive result by radiography displays a stone in the kidney, I beg to show by a number of plates. Although subject to occasional errors, a radiographic presentment is with our nearly completed technic a *sine qua non* for a positive diagnosis. Kümmel and Rumpel reported a series of 18 cases positively recognized in this way, and each one contained a stone. Joseph F. Smith was enabled to recognize a stone 13 times with success. Leonard, as is well known, in a report of 300 cases, found stones in 36, of which 50 per cent. were in the ureter. In five of ten cases operated upon no stone was found. That ossification of an abnormal rib cartilage or the presence of a phlebolith may simulate a stone in the plate, there can be no question. When one considers the small size of the many kidney stones and the depth at which they are placed in many fat subjects, it is difficult to conceive how the X-ray can invariably portray the presence of a stone. Perhaps in every case a negative result after repeated attempts allows the exclusion of a calculus, to quote from Kümmel and Rumpel. A single negative result is not conclusive. With the improved technic, stones, no matter what their composition, will cast a shadow. That the interpretation of this is sometimes erroneous, a plate of one of my recent cases shows very well. The patient had passed a number of small stones during the year. The picture showed four rather large stones. The operation revealed 20 stones, all of which could have passed except two. They were so closely packed together in the pelvis, that they appeared as four stones.

In considering the operative treatment of stone in the kidney, it must first be predicted that the really brilliant results achieved in this field have not impressed the profession at large with that confidence in the operation which, for example, belongs to operation on the gall-bladder. The reason for this doubtless is that before more exact methods were resorted to, negative findings were very frequent. Ten years ago I collected 44 cases of this kind. Doubtless the number could easily be trebled to-day. I have myself operated six times with negative results. In one case, indeed, the kidney was explored twice. The failure to find a stone where the diagnosis is made is now a very unusual thing. It is noteworthy in this regard, however, that I could find in the literature no cases in which death followed the exploration of the kidney for a stone. In many the operation leads to the discovery of conditions simulating stone which are remediable by operation. Among surgeons therefore, it is becoming an axiom that the presence of a renal calculus is an indication for operation. Although it is usually attended with less suffering than stone in the bladder, it is fraught with infinitely greater danger to life.

The development of pyelitis, or of pyonephrosis, or in the absence of a septic infection, the production of a chronic interstitial nephritis with atrophy of the pyramids and great thickening of the capsule proper of the kidney are sufficient indications for operation. When one has seen many cases of kidney stone, one can almost tell from the appearance of the capsule when the kidney is exposed, and the induration of the perirenal fat, whether or not a stone will be found within. Literature teems with cases, in evidence of the great danger which the subject of kidney stone runs from the sudden onset of calculous anuria.

Calculous anuria is, of course, an absolute indication for operation. Although in rare cases such anuria may last six to eleven days before ending in death, operation ought not be delayed for more than twenty-four hours. The anuria

must cause degenerative changes in the renal epithelium which may make the resumption of normal function difficult or impossible. Statistics show conclusively that in proportion to the time of interference the mortality of operation is low or high. The question as to the kidney to be operated upon is usually solved aright after considering the side of the last renal pains, the tenderness, etc. Unfortunately in those cases where it would be most needed, the aid from cystoscopic examination and radiography cannot be obtained. It is better in these cases to open the wrong kidney than not to operate at all. For the reflex anuria may in this way be relieved as has been shown in a number of cases. The cases in which operation is not indicated are those in which the patient from time to time after a severe colic passes a small stone. I beg here to present a number of stones, of which the patient had been passing many hundreds during a period of seven years. The patient is now seventy years of age, and for a year and a half has passed no stones. A remarkable feature of this case is that the stones, when passed, look rather as though a successful crushing operation had been done. Just what produces fracture of these stones in the bladder is something I have been entirely unable to find out.

In regard to nephrolithotomy, it may justly be said that no other major operation presents so low a mortality. Morris reported 34 aseptic operations with one death. Tuffier reported eight cases without a death. Of my 23 cases there was one death, due to intestinal obstruction from tight packing and pressure on the nerves to the colon. Israel reported a similar case. According to Rovsing there is a mortality of seven out of 115 cases. How much the graver operative interference in septic cases is shown by Morris, who lost 10 out of 43 nephrotomies and five out of 17 nephrectomies.

As regards the operation itself, the choice between incision of the kidney and incision of the pelvis, has, I think, been definitely settled in favor of section of the kidney. The ease with which wounds of the renal parenchyma heal, the extent to which the kidney can be incised for exploration and for removal of large stones and the greater danger of severe hemorrhage and of fistulæ remaining, where the pelvis is incised, have led surgeons to choose the incision through the kidney substance as the normal procedure in nephrolithotomy.

The operation is easy or difficult in proportion to the facility with which the kidney can be delivered into the wound. Where the shortness of the pedicle or extrapelvic adhesions interfere with the delivery of the kidney, the operation becomes difficult in the extreme. Surgeons choose the longitudinal, convex, marginal incision recommended by Giron in 1856. It is safe because the vascular anastomosis between the anterior and posterior halves of the kidney is by no large vessels. This line of safety which Kelly has recently proposed to call "Brödel's line" was previously described from corrosion preparations by Hyrtl in 1869. In none of my cases where this incision was done was the hemorrhage other than parenchymatous. I never have used a ligature within the kidney. To reduce this hemorrhage even to a minimum, the incision should as a rule not be longer than is needful for the introduction of the exploring finger. This makes the hemorrhage nil, while the search for the stone progresses. A short incision over the upper pole and another over the lower pole permits the examination with the finger of both the upper and the lower and the common pelvis, and permits us to reserve the so-called post-mortem section of the kidney for cases in which the finding of a stone is very difficult. Hemorrhage is easily controlled by the fingers of an assistant or by throwing a temporary rubber ligature around the pedicle. The objection to this method lies in the ease with which, by the manipulation necessary to accomplish it, a small stone might be pushed from the pelvis into the ureter, and the difficulty of sounding the ureter while the ligature is in place.

Retrograde catherization of the ureter must be considered essential to every operation for stone in the kidney. Even if a stone is not found in the ureter, a stricture, a valve or kink may be detected and relieved.

That the exploration of the ureter sometimes necessitates a very large wound has for many years impelled me in almost all of my kidney work to make the long, oblique lumbo-abdominal incision, from which by extension downward and inward the ureter can be exposed as far as may be necessary. In all aseptic cases the suture of the kidney is made to follow the removal of the stone. Immediate closure of the wound by suture is justifiable even in marked cases of pyelitis, if the ureter is competent to act as a natural drain. An exception in regard to immediate suture of the kidney must be made in those cases of aseptic nephrolithotomy in which anuria compelled the operation. In these cases it is doubtless safer to drain temporarily. When the kidney is enlarged and sacculated drainage is, of course, to be adopted. Nephrotomy for calculus pyelitis and pyohephrosis has a mortality of 21 per cent.

In view of the well-known frequency with which the second kidney is involved in calculus pyelitis, operative interference in this condition should be limited to incision, drainage and perhaps, in bad cases, to nephrotosis. It is remarkable how when a sacculated kidney is split in these cases and its margins stitched to the wound edges, and shrinking of the sacculation is established, the kidney gradually resumes a form something like the normal. Because of the completeness of the drainage, nephrostomy thus performed has a signal advantage over the older method of drainage.

Primary nephrectomy, as indicated, should never be performed for stone, except, as has occurred in the hands of Israel, when the hemor-

rhage is uncontrollable. Neither the branched form nor the size of the stone should weigh against conservatism. Stones weighing two ounces and more have repeatedly been removed and the kidney saved. Rovsing has recently reported the removal of one weighing five ounces, a fistula remaining for only a short time. It is in these cases of very large stones that profuseness of hemorrhage has necessitated immediate nephrectomy.

In conclusion, I beg to call attention to those cases in which the search for stone is negative. We cannot deny that there are other pathological conditions of the kidney, the symptom complex of which cover to a nicety that of stone. An analysis of them enriches our knowledge of renal pathalogy by two important data. They are: First, that chronic interstitial parenchymatous and capsular inflammation of the kidney may be limited to one side. Rayer already called attention to a case of this kind in his classical treatise on the kidney. Carefully studied cases of this kind are not numerous. I presented one with a section of the kidney before the Southern Surgical Association three years ago. The patient remains entirely well. Second. It is of prime importance that a surgeon should not consider an operation on the kidney in which he expects to find a stone negative in its results when changes in the kidney are found which, as in the case reported, cover to a nicety the symptoms of stones. Capsule splitting and the section of the kidney will doubtless relieve many cases which simulate stone, and which because of the impossibility of making positive diagnosis are not now subjected to an exploratory operation.

In conclusion, I would advise that in every case operated on with a result negative as to the finding of a stone, a small section of the kidney be removed for microscopical examination. It is only in such a way that minute changes of the kidney can be discerned, changes which, although seemingly slight, are often capable of producing, as in a number of cases reported, symptoms of great severity.

THERAPEUTIC VALUE OF COLORADO CLIMATE.

BY F. GILLETT BYLES, A.M., M.D.,
OF DENVER, COL.

In these days of growing distrust in the all-curative power of drugs, increased attention is being given to the subject of hygiene and sanitation, as a means of prevention of disease, and an increased interest in physiological therapeutics as a means of treatment.

Being a resident of Colorado and in frequent contact with people who are sent here from the Eastern States, on account of ill health, I am impressed with the character of cases who come here expecting immediate recovery, and more impressed by the advice given many of them by their home physicians. Judging from the number of cases of tuberculosis, which are sent here in the last stages of the disease, or with a constant high temperature and are left to spend their few remaining days among strangers, without the comforts of home and often without either money or friends, we are led to believe there must be a mistaken idea among many physicians as to the class of cases that are likely to be benefited and the class that are made worse by our Colorado climate.

The hope of being able to suggest something on this subject which has been forcibly impressed upon me, since coming from Pennsylvania to Colorado, is the excuse for this paper.

The intelligent selection of cases to be improved by our elevated climate is probably best attained by a brief resume of the physiological effects of altitude.

Climates may be classified as either sedative or stimulating. Jacksonville or St. Augustine, Fla., or Biloxi or Bay St. Louis on the Gulf, are instances of health resorts in a sedative climate.

The climate of Colorado, on account of its elevation, is classed as a stimulating climate.

The principal atmospheric differences observed in moving to locations of greater altitude are lessened atmospheric pressure, lowered temperature and lessened humdity. The most important physiological effects caused by lessoned atmospheric pressure are a quickening of the pulse—about one or two beats for every 1,000 feet of elevation—and a quickened and deepened respiration.

Many persons in ascending Pike's Peak, which is 14,143 feet high, suffer with what is known as "mountain sickness." This is manifested chiefly by very rapid and irregular heart action, accompanied by a sense of suffocation and extreme shortness of breath greatly aggravated by muscular exertion.

It consists essentially in the inability of the person to breathe in enough oxygen, not that there is not enough in the atmosphere for his needs, but because, on account of the lessened pressure, he is not able to use properly what there is. We know that the quantity of oxygen per cubic foot lessens as the density of the atmosphere, but it has been shown that a man does not feel any inconvenience from lack of oxygen until the per cent., which is normally about 20.96, has fallen to less than 13.7

This distress caused by lessened pressure induces our natural forces to work out a means of compensation. This compensation is brought about in two ways. First, the individual learns to expand more fully every part of his lungs, his breathing is more rapid and also a great deal deeper and fuller. His chest measurements increase usually from one to two inches. Second, the oxygen carrying power of his blood is increased by an increased amount of hemoglobin, and also by an increase in the number of red blood corpuscles.

This condition, which enables the man to breathe easily, will be accomplished in from three days to two weeks, and will continue as long as

he remains at this altitude, returning to its former state upon his descending to a lower level.

This effect of lessened atmospheric pressure, which is very marked at places of great elevation, as on the mountain peaks, is, to a greater or less extent, effective at all places of less elevation, and the means which nature uses to bring about a compensation constitute one of the important means of cure to patients submitted to its influence. With this idea in mind we could, I think, easily predict what cases of lung disease would be benefited by a change to a greater altitude.

It is reasonable to suppose that the increased circulation and increased exercise of the lung caused by altitude, would add vigor to the lungs of one who inherited a tuberculous tendency or, if the altitude is not extreme, would be useful to one suffering from incipient tuberculosis, especially if of the more chronic form.

It is equally evident that cases of acute phthisis or those far advanced in the disease, would be made worse by the change. That such deductions are correct is proven by the experience of the profession in Colorado.

The air is cooler in Colorado than in places of the same latitude and less elevation. Generally speaking, the temperature of the air falls one degree F. for every 300 feet elevation.

Cool air is stimulating to the nervous system, also to respiration and digestion, and indirectly to appetite and assimilation with the attendant gain in weight and strength. Heat has the opposite effect. Cool air is almost always dry, at least the cooler the air the less moisture it can contain. In addition to the influences of the temperature on humidity, the great distance of Colorado from any large body of water, its sandy soil and other natural causes render the atmosphere very dry. The actual annual precipitation of Pittsburg is 3½ times that of Denver. The lessened humidity of our atmosphere has a marked effect on many forms of disease. There can be no doubt that a lack of moisture inhibits the growth of many of the disease-producing bacteria. Tubercle bacilli thrive best in a warm moist atmosphere, and their growth and development are undoubtedly retarded by the opposite conditions.

Excessive secretions of the nasal and bronchial membranes are checked by the constant inhalation of cool, dry air, and the diseased condition causing them is often thus remedied. Furthermore, the lessened humidity of the air has a great influence on our sunshine, not only in its amount but also in its effect on the comfort and health of the people.

There are fewer clouds and more bright days in Colorado than in the East. Denver has 42 clear days to every 27 clear days in Pittsburg. This enables health-seekers to spend most of their time out of doors, and the mild winters along the eastern slope of the Rockies make it possible for one to spend most of his waking hours and all of his sleeping hours, throughout the year, outside of stuffy ill-ventilated rooms. The greedy manner with which the dry air goes for water favors evaporation of perspiration.

This not only adds greatly to our comfort in summer, but lessens the depressing effects of heat. There are no sultry days here and no cases of heat prostration. There being little moisture in the air, the sun's rays pass through more directly. The heat of the ray is not absorbed by intervening moisture, and, on this account, the difference of temperature in the sunshine and the shade and during the day and the night—diathermancy—is greater here than at places of less altitude. The diathermancy increases about one degree for every 250 feet of elevation.

On account of the directness of the sun's rays, their therapeutic power is increased. The great abundance of light has, doubtless, an important influence on physical and mental conditions of invalids, and the germicidal influences of the actinic rays is doubtless greatly increased by elevation and lessened humidity. The greater freedom of the mountain air from micro-organisms and the rapid action of light on photographic plates, as well as the brilliant tints of mountain flowers, all indicate either a greater abundance or a greater potency of the violet and ultraviolet rays. In my opinion phototherapy is of no inconsiderable importance in bringing about the cures of Colorado.

I believe that it is an established fact that the per cent. of deaths from tuberculosis, in any locality, is indirectly as the altitude of the locality (omitting, of course, the cases contracted elsewhere). It is safe to say that the cases of this "great white plague" contracted above 6,000 feet, are very rare indeed.

Other things to be taken into consideration in the selection of a suitable climate for a sick person are, character of the soil, freedom from disagreeable winds, character and purity of drinking water, as well as hotel accommodations and opportunities for earning a living. In all these respects Colorado affords unequaled advantages.

From this study of the climatic conditions of Colorado and especially from the experience of the profession here, we are led to believe that benefit or complete recovery may be expected in the following classes of cases:

In all cases of an inherited tendency to tuberculosis, as a prophylactic measure; in tuberculosis of the bones or parts of the body other than the lungs, with a view to prevent pulmonary involvement; in early pulmonary tuberculosis when it occurs in persons who are not of a markedly nervous type and when the disease is not accompanied by persistent high fever and is of a chronic rather than an acute type.

In cases of moist nasal catarrh, when not caused by nasal deformities; in bronchial catarrh, with or without asthma, especially in children and young adults; in most cases of purely nervous asthma and in many cases of hay asthma.

In chronic empyema and unresolved pneumonia and in many cases convalescing from pneumonia, who are under fifty years of age. If the patient is old, has heart disease, or is greatly emaciated, a sedative climate is better, at least until a fair amount of strength has been gained.

Patients who are convalescing from other acute diseases or suffering from physical or mental exhaustion, from overwork, worry, want of exercise, malarial affection or tropical cachexia, mild cases of anemia, most cases of glycosuria and many cases of nephritis are improved by this climate. Articular rheumatism is less frequent and muscular rheumatism more common here than in the east.

Diarrhea and digestive disorders are not as prevalent and trachoma is very rarely seen.

But there are two sides to this question, and we must not fail to mention the contra-indications. Some of these relate to the patient and others to the disease.

Patients over sixty years of age should not, as a rule, move to places of great altitude, because their muscles have lost their elasticity and cannot accomodate themselves to the change.

The muscular fibers of the heart and arteries are of especial importance in such cases. More work is thrown upon the heart and arteries and most organic diseases of the circulatory organs are made worse. It is generally stated that this climate is contraindicated in cases of weak or congenitally small heart, and in functional disturbances of the heart without organic lesion. My own experience is not in accord with this idea.

I believe the constantly increased work thrown upon the heart, together with the increased gain in vigor, which is usually present, have the effect of so increasing the muscular tonus and regulating the nervous supply of the heart as to render its action more nearly normal.

The exhilarating effect of altitude on the nervous system is well known. Many residents of this locality are frequently obliged to change for a time to places of less elevation. If they do not they suffer with insomnia. For this reason persons of an extremely nervous type seldom improve here, although some cases of a gloomy tendency are much benefited.

As contra-indications in certain diseased conditions we will mention:

Consumption, with a tendency to rapid breaking down of tissue, associated with high fever. Cases of acute phthisis or phthisis florida, and those in the advanced stages of the disease, and all cases with a persistent high temperature, even in the early stages, are not improved by this climate. We believe in such cases the end is often hastened by the change rather than retarded.

Intermittent attacks of high temperature do not contraindicate resort to altitude, unless the temperature is excessive or the patient extremely nervous. Hemoptysis is not a contra-indication. Structural alterations of the heart, atheroma of the blood vessels, aneurism or emphysema, either alone or as complications of other diseases, forbid removal to altitude.

I cannot refrain, in this connection, from making some suggestions in regard to the home physician's duty to his patient in placing him in the care of some honest, legitimate physician at his point of destination. If the home physician should have no personal knowledge of such a professional brother in Colorado, the medical directories will enable him to form some kind of an opinion.

Very often, too often, in fact, patients come here uninstructed, and before they have time to leave the dêpot some big, fat drummer will offer his assistance in finding them comfortable quarters, and before leaving them will have informed them that he, too, came here for his health, and that three months ago he was so emaciated by tuberculosis that he could not stand, etc., but he will always end his story by the statement that he was treated by the world-renowned specialists of the "Cure All" Medical Co., and, as they had done so much for him, he will call next day and introduce strangers to these wonderful specialists. The result is easy to imagine; the patient yields, a positive cure is guaranteed in thirty to sixty days, and the company get $50 or $100 of the sick man's money to start with, and a fair chance of absorbing most of the balance, leaving him to starve himself that he may be able to keep his contract with them.

Another mistake physicians make, is to advise their patients not to take any medicine or place themselves under the care of the doctor here. Patients often tell me this is their physician's advice.

If a physician's advice as to suitable food, clothing, baths, exercise, employment, location, ventilation and care of the sputum is of use to the patient in the East it ought to be of equal service here, or, if the patient has been in a measure sustained or his *vis medicatrix naturæ* increased, by a judicious administration of strychnine, iron, arsenic, fatty emulsions or any constructive medicament in the East, it certainly seems to me, it would not be the part of wisdom to suddenly withdraw any or all of these adjuvants.

A sick man in Colorado needs medical care just as much as he does in the East, and the same medical care aided by the atmospheric conditions of the place will, in suitable cases, result in much greater benefit to the patient here than there.

The benefit of Colorado climate to a tuberculous patient will depend very much on a proper understanding on his part of the kind of life he should live here. A tuberculous patient will do better in the East with plenty of food and home comforts than in Colorado on a starvation diet. He had better live out of doors in the East than shut up in a stuffy room in Colorado.

DOES ABSENCE OF EXTERNAL INJURY LEGALLY DEMONSTRATE FRIGHT OR MENTAL ETIOLOGY?

BY JAMES G. KIERNAN, M.D.,
OF CHICAGO.

Judges of the State Supreme Courts have evinced a tendency to deny etiological value to anguish, fright or other psychic factor as a result of which damages can be obtained. In the case of Braun *vs.* Craven,[1] the Illinois Supreme Court emphasized this view. By a not unnatural evolution, attorneys have sought further to develop this view into the claim that external evidence of injury being absent, the injury resulting from an explosion must be regarded as due to fright or other psychic influence, and hence not a fitting subject for compensation under the views enunciated by the Illinois Supreme Court in the case just cited. This standpoint was taken by ex-Judge Sears and was sustained by Judge Chytraus, of the Supreme Court of Chicago, in the case of Baudler *vs.* People's Gaslight and Coke Company. The case, however, was appealed by Waters, Johnson & Baker, the plaintiff's attorneys, to the Appellate Court. The circumstances of the case, in which I was an expert for the plaintiff, are as follows:

The plaintiff brought suit against the defendant for personal injuries alleged to have been sustained March 6, 1899, by an explosion of gas in the basement of his house in Chicago. He was a German by birth, a carpenter by trade, who had built his own house and piped it for water and for sewerage, but not for gas. The defendant company had a gas main in the street in front of the house, but no connection pipe ran from the main to the house. For at least two months prior to the explosion this main had been leaking in front of the house. Several of the neighbors had noticed the smell of escaping gas. One of them told a man who read the meters of defendant in her house of the defect and he replied: "It is going to be fixed in a short time." Another neighbor gave evidence to the same effect. For two months the gas escaped through this leak, passing into the cellar and sleeping room of plaintiff's house. He smelt the odor but says he did not know what it was.

March 6, 1899, after a very uncomfortable time that night, he and his wife went down into the cellar to find out whence the smell came. They located it near a post. The wife struck a match on that post and an explosion occurred which moved a stove standing near by at least two feet and changed the position of the carpenter's bench a foot or more. When the match was struck the plaintiff was standing from four to six feet distant from his wife. It seems that neither he nor his wife were thrown down by the shock. A witness (whose house was fifty feet from that of plaintiff, and who was in his basement when the explosion occurred) says: "A big oak plank fell down. It was a big explosion all right."

[1] 175 Illinois, 401.

The plaintiff received no visible injury. Before the explosion he was a healthy man in body and in mind. His family physician says: "He was in good sound condition up to the time of the accident, so far as I know." Five other witnesses who had known the plaintiff for years testified that before the accident he was not nervous but healthy, sociable, a kind man, interested in his work. Immediately thereafter his physical health became impaired and he lost his mental balance. He became suspicous of every one, feared his wife and daughter would poison him, and was irritable, wandering from home and always complaining of smelling gas. He was taken to a hospital where he remained a short time. He went to Europe saying he would stay there all his life, but came back within six weeks. He is no longer a trustworthy or steady workman. His memory is defective. The only objective symptom I testified to finding was a heart murmur: "The disorder prevented one of the valves of the heart from closing and acting properly. If the heart were perfectly healthy before the explosion, and this occurred afterwards, I should be inclined to refer this murmur to the explosion. It indicates a weakness and irregularity of one of the valves of the heart. It shows the valve leaked. In the absence of other causes in a healthy person I should ascribe it to the explosion."

At the close of plaintiff's case the trial court, on motion of ex-Judge Sears, peremptorily instructed the jury to return a verdict for defendant. For this ruling an appeal was perfected. Presiding-Justice Ball, who delivered the opinion of the Appellate Court, said therein: "When a case is taken from a jury by a trial judge and comes to us for examination on appeal, the question to be determined is—the whole record being considered—was there competent evidence, which, from its reasonable intendment and inference, fairly tends to make out plaintiff's case. It was not for the trial judge, nor is it for us to weigh the evidence. This is a well-settled rule of our Court. Any other rule would leave the trial by jury to the judgment and discretion of the presiding judge, a result repugnant to the spirit of our jurisprudence and forbidden by our State Constitution and Federal Constitution.

"The evidence clearly establishes negligence of defendant as charged in the declaration. For at least two months prior to the explosion gas had been escaping from this main. Those who passed by noticed it. The evidence also tends to prove that the defendant through its employees, were twice notified of this leak, long enough before the accident for its repair, had reasonable diligence been used in that regard. No disturbance of the street was shown after the time the main was laid; from the evidence it would seem that this leak occurred because of faulty construction. If so, the person injured thereby, without fault on his part, has a right of action against defendant for all the damages sus-

tained by him therefrom, even though the defendant had no notice of the defect.

"This main was laid in the street with the great and exclusive privilege of supplying that part of the city with light for private gain. Through this main defendant passed gas known to be highly explosive. It was the duty of defendant to keep the gas within the main and connecting pipes until it was delivered to the consumer. To this end the defendant was not only bound to lay down a main of good material, with skill and care, but it was also bound to inspect the main from time to time and with such frequency that the defects caused by use or accident might be repaired with reasonable despatch. The care required of defendant is commensurate with the subtle and dangerous character of the material in its exclusive charge and control.

"Some of the authorities[1] hold that the mere fact of the escape of gas from a place under the control of a gas company is sufficient evidence to raise the presumption of negligence upon its part.

"The evidence shows that the house of plaintiff was not piped for gas; that he was not a consumer of defendant and that the gas escaping from this defective main passed into his cellar. We are satisfied the evidence shows such negligence upon the part of defendant that the case should not have been taken from the jury upon this point.

"Was the plaintiff guilty of such negligence as warranted the trial court in directing a verdict for defendant? It must not be forgotten that plaintiff was upon his own property. Therefore he was under no obligation to watch lest he might be injured by the unlawful act of defendant in flooding his premises with explosive gas.[2]

"Plaintiff says that while he detected the odor of escaping gas he did not know what it was. Upon this appeal, his statement in that particular must be taken as true. Not knowing the character of the odor he was consequently ignorant of its dangerous qualities. He did not create the situation, and he was justified in attempting to solve the mystery which rendered his house uninhabitable. Under these circumstances, if in so doing he had himself lit the match which caused the explosion he would not thereby be guilty of negligence, which, as a matter of law, would deprive him of redress as against the wrongdoer. Believing this to be the law, we need not enter into the vexed question as to how far he was responsible for the act of his wife in lighting the match. It is presumed he knew she was going to light it. A presumption arising from the fact that they went into the cellar together to ascertain the cause of their discomfort. The evidence fails to show that he knew in direct terms what she was about to do. She was not necessarily his servant, nor is he conclusively presumed to be responsible for the acts she might commit without his knowledge. Her contributory negligence cannot be visited upon plaintiff unless she was at the time his servant or agent.

"If the occupant of building knew gas had been escaping for some time and sent his servant into the cellar with a light whereby an explosion is produced, this will be evidence sufficient to support a verdict for defendant, but it will not warrant a judge in directing a non-suit.[1]

"Granting that the plaintiff was not guilty of contributory negligence, the trial judge in directing a verdict for the defendant, must have assumed that the plaintiff received no physical injury, but that all of his disability following the explosion, and which date from that time, resulted purely and solely from fright. The evidence goes no further than this, that the plaintiff received no *external* physical injury. He was struck by the exploding gas only. The force of such an explosion depends upon the strength of the explosion and the proximity of the party to the point of the explosion. That one may be seriously injured or even killed by such an accident without apparent external injury, we know, if we are permitted to rely upon common observation and knowledge. That gunners are sometimes disabled by the atmospheric concussion resulting from the discharge of heavy artillery, we must believe from personal observation and from the unvarying statements of writers upon the subject. One may be internally injured without external indications and that mind and body may be impaired by internal lesion or weakness as well as by external violence. The disability of the plaintiff followed the explosion so immediately that the inquiry at once arises, Did they not proceed from that cause?

"It seems to us to be far from true that all reasonable minds viewing this evidence would reach the conclusion that "the heart murmur" was caused solely by fright. If they would not so agree then the act of the trial judge, in directing a verdict for the defendant, is wrong. But we are not left to supposition in this case. Dr. Kiernan, in speaking of the condition of plaintiff, says: "A sudden change has occurred for which there is no adequate cause given, other than the explosion, which might have been sufficient to produce the condition found. If the heart was perfectly healthy before the explosion and this murmur occurred afterward, I should be inclined to refer this murmur to the explosion."

"This testimony tends to prove that the physical impairment of the plaintiff was the direct effect of the explosion. Its credibility and weight should have been submitted to the jury, whose duty it is to pass upon all questions of fact.

We have examined the cases cited for defendant, especially Braun *vs.* Craven, and are of the opinion that under the facts here presented they are not controlling." The judgment of the Superior Court was therefore reversed and the case remanded.

1 Shearman & Ran Neg., Sec. 697; Smith *vs.* Boston Gas Co., 129 Mass., 318.
2 Dunham *vs.* Daudelin, 41 Ill. App., 175.

1 Lannigan *vs.* N. Y. G. L. Co., 71 N. Y., 29.

COMPRESSED-AIR ILLNESS, OR CAISSON DISEASE.

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Man, dwelling in the valleys and low hills through countless centuries, has attained a physiology which allows but slight variation from an atmospheric pressure of seven hundred and sixty millimetres of mercury. He early learned that any great departure from that pressure produced disturbances of his savage economy that were startling and unpleasant.

Some of the more hardy found that if they ascended the mountains, reaching a height of a mile and a half or two miles, the respiration became rapid, the heart quickened, the blood pounded in the temples producing headaches, oftentimes blood flowed from the nose, eyes and mouth, and there was nausea and vomiting. But all of their wanderings over the surface of the earth furnished them no example where the air was sufficiently compressed, because of a low altitude, to produce the slightest physiological disturbance. The valley of San Diego County, California, three hundred and sixty feet below the level of the sea, does not convey to the traveler any appreciable sense of air compression. In the deepest valley known to the world, in which lies Lake Assal, east of Abyssinia, seven hundred and sixty feet below the level of the sea, no unpleasant effects of air compression is to be discerned.

Not all creatures of the earth are subjected to this peculiar limitation of atmospheric pressure. It is recorded of the great naturalist, Humboldt, that after climbing the Cordilleras he saw the condors soaring majestically at the noble altitude of eighteen thousand feet. From this dizzy height, now and then, they would stoop to the surface of the sea, in a few moments of time, passing through a range of barometric pressure far greater than that between earth's highest mountain peak and her lowest valley.

It is known that fish live in the deepest portions of the sea and sustain the enormous pressure of miles of superimposed brine. When scientists began to bring these fish up from the profound depths of the ocean they were surprised to find that the bones were spongy and apparently ill-fitted to withstand a pressure of tons to the square inch. It was later assumed that it was the expansion of the compressed fluids and gases, which had disentegrated and rent apart the most solid portions of their piscatorial anatomies.

That it is possible for man to acquire an ability to live in comfort and health in very high altitudes is evidenced by the fact that the Quichuas, a healthy, vigorous, broad-shouldered, long-chested race of Indians, inhabit the high peaks of the Andes, fifteen thousand feet above the level of the sea. Also the "Cods" a Tartar race, live on the high plateaus of Thibet, and are people celebrated for their strength and suppleness; in fact, "Cod," in their language, means strength.

That man can adapt himself quite rapidly to high altitudes is shown in the records of the ill-fated Austro-French expedition to Mexico in 1863. It is recorded that the troops stationed on the high plateaus of Anahuac become quickly and completely acclimated.

The same curiosity or fancied necessity which led early man to the mountain tops soon caused his progeny to attempt the bottom of the sea, yet we are told that diving bells were not invented until the beginning of the sixteenth century. While literature affords some fragmentary observations upon the effects of compressed air on man while going down in diving-bells, yet we find but little that is satisfactory until after the year of 1839, when the French engineer, M. Triger, put to practical use the great principle of compressed air as a safe barrier against water and quicksand. Large bodies of coal were known to exist beneath the valley of the Loire, but above it was a hitherto impassible layer of water and quicksand. The ingenious Frenchman was equal to the task. By the use of compressed air, shafts were carried down in safety to the coal below, and one of the greatest problems of engineering was solved.

The application of the principle to pier-building for bridges was first made by Mr. Hughes, an English engineer, in 1850. Compressed air was not used in tunnel building until 1879. This was in the construction of a tunnel beneath the Hudson River, designed to connect Jersey City with New York.

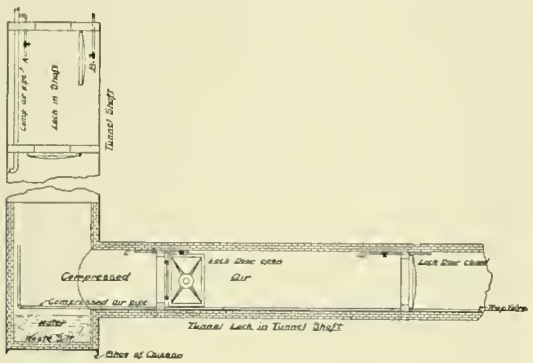
Soon after this principle was applied to these various engineering undertakings it was discovered that if the workmen were subjected to too high pressure or remained too long under pressure, as low even as one additional atmosphere, a peculiar, yet tolerably constant set of symptoms developed when they returned to a normal atmospheric pressure. Among scientific men this disorder has received various appellations,—"diver's paralysis," "caisson disease," and "compressed-air illness." Among the workmen it is known by various names, each usually significant of some prominent symptom. The "bends," when the pains are in the bowels or extremities; "chokers," when dyspnea and a peculiar choking feeling is present; "staggers," when vertigo is pronounced; "prickles," when the skin is the seat of a prickling sensation, believed by the workmen to be air coming through the skin; the "fits," when convulsions appear.

Before passing to a consideration of the disease I desire to call your attention to these sectional drawings which I have prepared, hoping that they will aid in the explanation of this interesting phase of submarine engineering. Some caissons are made of wood, others of iron or steel. Steel and iron caissons are usually cylindrical. A caisson may be compared to a huge box with the bottom turned upward, and

the open space underneath to the working chamber. It is constructed on ways, from which it is launched like a ship, towed to the desired spot, weighted with concrete and masonary until it sinks and its box-like edge, armed with an iron cutting shoe, rests on the bottom of the lake or river. Air-compressing engines are set to forcing air through the compressed air pipe into the working chamber. Within the chamber this pipe is provided with a trap valve which closes from its own weight and prevents the escape of compressed air in event of an accident to the machinery, thus providing for the safety of the workmen. The air is pumped into the chamber until all of the water has been forced out and the lake's soil lies dank and bare at the bottom of the working-chamber. The chamber is now ready to receive the workmen through man-holes left in its construction and which are provided with locks. These locks are supplied with two strong doors which swing downward and have air-tight fittings. Each one is pierced by a pipe provided with an air-cock within the lock.

The passings into and out of the working-

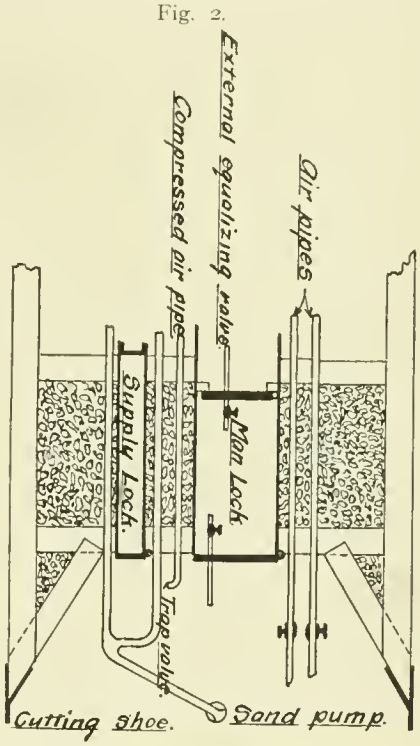
Fig. 1.



chamber are respectively called "locking in" and "locking out," and as around these transitions is grouped much of the etiology of this disease, I desire you to obtain a correct idea of these procedures. When the caisson is towed to its position and sunk, the lower door of the lock is closed and the upper left open, as is shown in the shaft of Fig. 1. Air is then forced into the chamber until the water is displaced and the chamber is ready for the workmen. To go into the compressed-air chamber,—"locking in,"—the men pass through the upper door into the lock, close the door and the air-cock B (Fig. 1), and then open the air-cock A, which allows the compressed air to enter the lock until the density of the air in the lock equals that of the working chamber below, when the door falls of its own weight and they are free to enter the chamber. In "locking out" the process is reversed. The lock is entered from below, and the lower door and cock A closed. Cock B is then opened to allow compressed air to escape until the lock pressure equals that of the atmospheric air, when the door falls, allowing the workmen to pass.

When the lake bottom has been well excavated the workmen open one of the air-cocks in the air pipes, which are seen in the working-chamber of Fig. 2, and allows some of the air to escape until the great weight of the caisson causes it to settle deeply into the soft mud and silt. In the meantime, and above the water-line, the masonry of the piers is building on the top of the caisson, leaving passageway for men and material to the working-chamber below. The great weight forces the caisson downward, and is called, "settling the caisson." The workmen excavate the silt, which is carried to the surface by means of sand-pumps, blow-pipes, and buckets, until they are again down to a level with the cutting shoe of the caisson, when the air pressure is once more lowered and the caisson allowed to sink. This

Fig. 2.



Sectional View of Wooden Caisson and Working Chamber

maneuver is repeated until a solid foundation is found for the pier. Concrete is then "locked in" and the whole working chamber is filled; and lastly the locks are removed and replaced by the same material. When the shaft is sunk for tunnel-building the process varies only in detail.

Did time permit, it would be interesting to recount the early observations of compressed-air illness.

Since the beginning of the great water tunnel at Cleveland, five miles in length, underneath the bed of Lake Erie, I have had the opportunity to observe and study more or less completely, over fifty cases of caisson disease.

On request of Dr. Sollmann, the secretary of the section, I shall attempt a discussion of the clinical phases of this interesting and remarkable

disease, using the observations of these cases as a basis for my remarks.

The cases observed presented almost every phase of the affection, and varied in severity from a transient attack of pain or giddiness, to violent convulsive seizures, rapidly developing coma and death. Inquiry of the patients and also of Dr. Frank Roth, who was for some months stationed in Crib Number 2, reveals the fact that almost every one of the men at work experienced attacks of pain in the joints, or the flesh, or abdomen, vertiginous attacks, dyspnea with choking sensations, and attacks of prickling of the skin. The majority of these fifty cases observed were merely exaggerated instances of the almost daily experiences of the "sandhog man."[1]

In consulting my records I find that four suffered from hemiplegia, fifteen from paraplegia, two from monoplegia, and nine from violent vertigo. In the remainder pain was the reason for their entrance of the hospital.

The transient nature of many of the symptoms is very puzzling. Pains after coming out from "the air," as has been remarked, is so common that ordinary attacks are thought little of by the workman, who takes his refreshments and sleep and returns to the work. These pains may be in any part of the body, but are usually about the large joints or abdomen. They may be so slight as to cause but a transient discomfort, or so severe as to be beyond human endurance.

Not a few cases of transient hemiplegia, paraplegia and monoplegia are observed. Indeed so evanescent are the symptoms that the workmen may be completely paralyzed in some of his members soon after "locking out," yet so far recover as to go down two and one-half hours later with his regular "shift." Eight of the fifteen cases of paraplegia observed averaged in duration but four days; two made partial recoveries, two are hopelessly crippled, and three died from cystitis, bed sores, and exhaustion. In every case of paraplegia that I have examined, however slight, there was paralytic retention of the urine. Two case of paralytic retention of urine without other paralysis were observed. Aphasia, usually quite transient, was observed four times, once alone, once with paraplegia, once with a combined paraplegia and hemiplegia, and once with a right hemiplegia.

Vertigo, in every degree is met with. It is so common as to cause few of those attacked to stop work on account of the "staggers." I recall one patient who worked eight hours under a pressure of thirty pounds additional[2] on his very first shift. When he came to the air he said he thought the top of his head was blown off. His vertigo was intense and he could not stand. He soon became unconscious and remained unconscious and insensitive for four days.

The following abstract of the case of Thomas R., seen at the City Hospital, is given principally to illustrate a case of the "chokes," but of great interest because of the number and variety of symptoms.

The patient began working in the waterworks tunnel November 15, 1899. December 22, after being in the "drift" eight hours, he came up feeling well as ever, sat down at the table for supper and almost immediately his legs, from the hips down became numb and at the same time he experienced dizziness. Upon attempting to stand he found that all muscular power was gone from his legs and he promptly fell. He was placed in a hot room and his legs rubbed. The next afternoon he was brought ashore and sent to a hospital. He was unable to pass urine from time of attack until two or three days later. When catheterized at the hospital a large quantity of thick turbid urine was removed. After four or five catheterizations the urine passed from him uncontrolled, from paralytic incontinence of the spincters. This condition continued. He could, however, feel the urine passing through the urethra. Feces were discharged without patient's knowledge or control.

About the fifth day sensation returned to his legs as suddenly as it had departed, and about the same time he became able to move those members to a very limited extent. A little later pains appeared in the large joints and some of the muscles, especially those of the thighs and abdomen, and were so severe, at times, as to be almost unbearable. Occasionally they would appear in the head and were accompanied by blindness, nausea and vomiting. At times, when the legs were extended and patient on his back, a leg and thigh would suddenly be brought to extreme flexion causing excruciating pain, mostly in the abdominal muscles. Again he would experience what the workers call the "chokes," which he said was even harder to bear than the other pains. The sensation was such as would be produced by a tight grip about the neck which almost strangles. It was accompanied by nausea, usually with inability to vomit. With it came cramp-like pains in the abdomen and great difficulty in breathing. The sufferer died February 27, 1900, of exhaustion, hastened by cystitis and a large bed sore over the sacrum.

From a study of these cases I can briefly sum up the symptoms as they appeared to me:

Symptoms.—The symptoms of true compressed air illness occur only during or after the patient's return to the normal atmospheric pressure. In point of time they may occur during the transition from the compressed air to the normal atmosphere,—"locking out,"—immediately after "locking out," or they may be delayed several hours. Every grade of caisson disease may be met with, from transient twinges of pain in an about the elbows and knees, to convulsions, coma and death. The pain is intense, with remissions and exacerbations; particularly severe in the stomach and about the large joints;

1 Pressure worker, or, less elegantly, "sandhog man," is the name these workers apply to each other.

2 By this is meant 30 lbs. in addition to the one atmosphere at the sea level.

the victim is bent double with pain, hence the term "the bends." The pain is intolerable.

The duration of the disease depends largely on the type. The neuralgic cases last from a few minutes to five or six days, although the usual duration is about twelve hours. The duration of the paralytic cases can only be measured by the amount of damage sutained by the central nervous system. Some paralytic cases recover quickly; others perish from exhaustion and cystitis after a lingering, painful illness. Many are permanently crippled. The lethal cases are usually of rapid onset, and death is swift and sure. Some of the brain types may be transient, and present headaches, giddiness, double vision, incoherence of speech, and sometimes unconsciousness and convulsions.

The paralytic forms are atypical, with the greatest tendency or paralysis of one side or both lower limbs. The bladder and bowels are almost certain to be weakened or paralyzed. This often occurs when little or no evidence of paralysis exists elsewhere. Any member of the body may, through paralysis, lose the power both to move or feel, and yet be the seat of atrocious pain, a genuine *anesthesia dolorosa*.

The fatal cases, frequently convulsive from the start, are very severe, and usually develop a deepening coma which ends in death.

Aside from the symptoms proper of caisson disease we have a number of disturbances of minor importance. Most prominent among these are the symptoms in connection with the ears. These symptoms, however, appear during the process of "locking in" and "locking out," and consists of pressure exerted on the ear drums either externally while "locking in" or from within outward while "locking out." Not infrequently the ears are "blowed out" as the workmen express it, in which case a small perforation of the drum takes place. This is looked upon by old hands to be a fortunate occurrence, since they will no longer be troubled with the "air in the ears." While undergoing compression the drums of the ears should be inflated, and while undergoing decompression rapid swallowing is necessary. If the Eustachian tubes are closed through some catarrhal trouble or cold severe pain and rupture of the drum is very liable to occur. It is quite possible that some of the cases of violent vertigo not infrequently observed, are due to the effect of air upon the otic structures.

Etiology.—The causes of caisson disease may be divided into predisposing and exciting.

The predisposing causes are those which relate to the workman's bodily condition and habits. There seems to be a special predisposition on the part of some persons who are affected by a short exposure to a pressure that ordinarily affects no one, while others appear to enjoy a surprising immunity although exposed to all of the causes recognized as most active in producing this nineteenth century disease.

It was early remarked that the liability to caisson disease is very much greater in those engaging for the first time in "pressure work." It is also a matter of record that those who begin with the work when the pressure is low, and continue at the work during the sinking of the caisson, and are daily subjected to the gradual increase of pressure, are much less liable to suffer than those engaging when the pressure is high. That this apparent immunity is only relative, is shown by the fact that some very serious attacks occur in old hands, and very often without discoverable cause.

Dr. Andrew H. Smith, while observing the cases of caisson disease that developed during the sinking of the piers of the East River Bridge, in New York, was convinced that individuals with a tendency to corpulency were especially predisposed to the disease.

Jaminet insisted, and it is now a common observation of experienced men, that to enter the caisson while fasting is hazardous. Very unpleasant effects are oftentimes felt on entering the caisson with a full stomach, before the lapse of from forty to sixty minutes after the meal.

Douchy and others have maintained that alcohol is a potent cause of the attacks. Disease or any depression of the vital forces from fatigue, loss of sleep, debauchery, or alcoholic excesses, no doubt increases the liability to an attack.

The exciting causes of the caisson disease are those excitations which determine the advent of the attack. There are seven paramount excitants to the disease which I will name in the order of their importance: (1) Degree of atmospheric pressure; (2) length of sojourn under such pressure; (3) the rapidity of the transition from the condensed to the normal atmosphere—"locking out;" (4) insufficient lapse of time between leaving the condensed air and returning to the same; (5) lack of sufficient ventilation of the areas under pressure; (6) exposure to a damp, chilly air after leaving the lock; (7) active muscular exertion after "locking out."

It is very doubtful if the disease ever occurs in workmen subjected to less than fourteen pounds pressure, and both its severity and frequency increase in a direct ratio to the rise in the atmospheric pressure multiplied by the length of time exposed to such pressure. Men can usually work with comparative safety for a period of eight hours under a pressure of from fifteen to twenty pounds in addition to the one atmosphere of the surrounding air; under a pressure of twenty to thirty pounds, six hours divided into two "shifts" of three hours each; under a pressure of thirty pounds, two hours divided into two "shifts" of one hour each; but under a pressure of from forty to forty-nine pounds, two "shifts" forty minutes each are all that can be borne with any degree of safety. The caissons at Memphis were sunk one hundred and twelve feet below the water level, the deepest caisson work, I believe, that then had ever been accom-

plished, and the pressure reached the highest known to caisson sinking—forty-nine pounds. The Eads bridge at St. Louis, also demanded a pressure of almost the same amount. One of the shafts of our water tunnel, now in course of construction, is one hundred and sixteen feet deep, but because it is in clay, needs little more than forty pounds pressure, enough, being in clay, to furnish many cases of the "bends."

The necessity for a proper lapse of time between the "shifts" of workmen is very important and should be insisted upon. In the too rapid transition from the condensed to the normal atmosphere—"locking out"—lies a most frequent cause of caisson disease. In fact, it is quite certain that if sufficient time were allowed for "locking out," the accident would never occur unless the exposure to pressure had been prolonged beyond the before-prescribed limit of time. A time limit should be fixed for "locking out," allowing five minutes for the first twenty pounds pressure and for each additional pound one-half minute should be added.[1]

Experience has taught "pressure workers" that hot coffee and hot blankets to prevent chill are very useful. At Rob Roy, Ark., fourteen men came out of a shaft and laid down on benches in a poorly constructed building, and as the weather was warm, went to sleep with little cover; three hours later a "norther," one of Arkansas' cold wind-storms arose, and nine out of the fourteen men were severely and immediately attacked by the "bends." This is a good illustration of the effects of cold after coming out of the caisson.

Few authorities even mention the importance of active ventilation of the condensed-air area as a preventive of the disease. My attention was called to it by a patient, an engineer, who tells me that whenever experienced workmen strike clay they grimly remark, "It's full of the bends," notwithstanding that they are aware that clay demands less pressure than sand. In the sand at Memphis, although the pressure reached forty-nine pounds, there were fewer cases of "bends" than in our clay-walled tunnels, with a pressure of about thirty pounds. This was, no doubt, due to the method of excavating sand by the use of blow-pipes, which demands a rapid change of air in the caisson. It is quite probable also that the loss of air through leaks in the caisson causes a greater amount of air to be forced into the caisson to keep up the pressure, thus perfectly ventilating the narrow place. It is also certain that the use of iron cylinders, instead of the less tightly made wood caissons, gives rise to "bends" more frequently on account of the lessened ventilation. Practical workmen are all aware of this fact.

[1] Since the above was written, examination of a number of cases and conversations with Dr. Frank Roth causes me to believe that it is not so much the decompression as it is the length of sojourn under the pressure that determines the attack. The lock tender is an instance of this fact. He passes in and out with a reckless regard to time, is never long under pressure, and, as has been frequently remarked by other observers, *never is attacked.*

The first scientific writer who called attention to the importance of ventilation was Hunter, whose thesis concerning the disease as observed during the construction of the Forth bridge, unfortunately was not published. He is quoted by Snell, whose carefully recorded observations made during the construction of the Blackwell tunnel, London, are of great value.

The following table, taken from Snell's book, "Compressed-Air Illness" will serve to illustrate the tremendous importance of ventilation, which our tunnel and city engineers entirely overlooked until nearly half the work was completed, and many workers maimed and killed by an ignorance or carelessness little less than criminal.

Cubic feet of fresh air per man, per hour, in average daily shift.	Number of days.	Cases of illness.	Estimated cases of illness for one hundred days.
Below 4,000	56	16	28.5
From 4,000 to 8,000	47	9	19.1
From 8,000 to 12,000	71	8	11.2
Above 12,000	41	0	0

Years ago, before electricity was used to light compressed-air chambers, the soot from the lights was one of the terrors of the workmen. The respiratory tract became so saturated that for many months after the expectoration would be tinged with black. It was discovered that this was due to the fact that air under pressure does not circulate. Yet we find in the lake tunnels the engineers were ignorant of these facts, or they have little reckoned the value of human life, for the only pipes conveying air to the tunnel ended just beyond the lock, while the workmen were as far as seventeen hundred feet distant at the face of the tunnel. And they gravely wondered at the City Hall why there was an explosion in the tunnel and a few lives lost!

When one great explosion took place in the tunnel with a loss of eleven lives, the pipes would admit only nine thousand cubic feet of air per hour to the eight men and two mules. Allowing the mules the consumption of air equal to seven men, we have but six hundred cubic feet of air per man. We have no law in Ohio for the protection of men working in tunnels, but I would suggest that the Humane Society ought to have looked after the mules!

On leaving the caisson there is a great increase of heart and lung action; the subject often gasps for breath; he is manifestly ill-fitted for any severe exertion, and abundant experience has demonstrated that many cases have been caused and others aggravated by the error of having the locks low down in the shaft instead of at the top. Triger demonstrated at Challonnes that when the men made the ascent of seventy feet under pressure to the lock at the top of the shaft, it was done more easily than in the open air. Elevators are now used in deep shafts, and certainly their use is attended by a lessened number of attacks.

A NEW CASE OF CHLOROMA WITH LEUCEMIA, WITH A STUDY OF CASES REPORTED SINCE 1893.

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AND
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(Continued from Page 976.)

OBSERVATIONS ON CHLOROMA SINCE 1893, BY DR. DOCK.

Since 1893 twenty-one cases of chloroma have been reported more or less fully. Two more were mentioned by Beneke and Drozda in discussions. Bramwell refers to probable cases known to him, as well as an interesting case described in his paper referred to in this article, in which some green lymph glands were found in the body of a patient who died of acute leucemia. Dr. Trevithick (personal communication) has heard of another case. No doubt some of the cases of symmetric tumor of the orbit, examples of which are frequently reported, are really chloromatous. I have heard indirectly of two unreported cases of chloroma observed in German clinics, in one of which there was leucemia. Many authors reporting cases of chloroma refer to the greenish color of the lesions in ordinary cases of leucemia. It is not necessary to discuss this particularly, but I shall refer later to a most interesting case observed by Türk.

Sex, Age, Duration.—In the present series of 22 cases there were three females, 19 males; or, in both series nine and 29 respectively.

The average age was 18.8 years, or three and one-half years older than in the former series. The average is raised by the occurrence of four cases in persons between thirty-eight and fifty-two years; 15 cases were less than twenty-five years old, 12 less than sixteen, one ten months.

The average duration was 5.5 months. In 10 it was four months or less, two each being stated as one and two months. In one case it was one year, another thirteen months, in a third one and a half years.

Location of the Chloromatous Growths.—Regarding the seats of the peculiar green formations, the data in the later cases resemble in general those of the earlier series. Some part of the head was affected in all but two of the cases in which the examination was complete. In Bramwell's case and our own the skull was not examined. In Gümbel's case the orbit, temples, and periosteum of the base of the skull were not involved, but there were green masses in the dura of the brain. In Rosenblath's two cases the orbital tumors were not adherent to the periosteum, but seemed to proceed from the lids (in one also adherent to the optic nerve), and the cranial bones and periosteum were free from chloroma. In one of the cases the nasopharyngeal space contained green masses. In Sternberg's case the head showed no involvement. The most frequent seats in the head were the orbits (12 cases), usually involving the periosteum; the dura or sinuses (9 cases); temporal bone, especially in the auditory region (7 cases); the temporal fossa (8); less frequently the sphenoid (3); ethmoid (2); the choroid plexus (2); the nose, nasopharynx, maxillary antrum, pterygoid fossa, soft palate, gums, mastoid cells. The vertebræ were affected in 9 cases, usually in the periosteum of the bodies, sometimes in the dura, sometimes the periosteum of the processes, or the fat in the vertebral canal. The sternum was affected in 7 cases, in the periosteum either front or back, or eroding the bone (Rosenblath); sometimes the growth was continuous over the sternum, clavicles, and ribs. The ribs were involved in 8 cases.

The other bones were not so regularly examined, but green infiltrations or tumors were found in the periosteum of the sacrum, coccyx, iliac bones and the bones of the extremities, in the diploë of the skull, and in various flat and short bones. Chloroma was found in bone-marrow in 7 cases. The liver was the seat of green growths in 8 cases, the kidneys in 12, spleen 3, stomach once, (Weinberger), intestines three times (twice in the appendix). The lungs, pleura, pericardium, endocardium, the heart muscle (Dunlop) were rarely affected, also the serous and synovial membranes. The lymph glands were frequently involved, but in one case (Klein and Steinhaus) it is expressly stated that the lymph glands were without pathological changes, the growths affecting the periosteum of the bones of the head and trunk, the kidneys, prostate, and bone-marrow of the femur. The cervical glands were most often involved (11 cases); less frequently the axillary, inguinal, submaxillary, mediastinal and bronchial glands, and those in the portal fissure of the liver, the lesser curvature of the stomach, around, above, or behind the head of the pancreas, the prevertebral and mesenteric glands. Other locations were: the conjunctiva, tonsils, mucous membrane of the epiglottis, larynx, arytenoid cartilages, thyroid gland, thymus, bladder, prostate, urethra, ovaries, mammæ, pancreas, diaphragm, pelvic connective tissue and periosteum; the insertions of many muscles, as the temporals, intercostals, psoas and dorsal muscles; the brachial plexus, the adventitiæ of arteries and veins, or even all the coats of the vessels, the subcutaneous tissue (Stevens), and the skin (Schmidt, Bramwell, Hitschmann).

The bone-marrow of the long bones was the seat of chloroma in seven cases (Schmidt, Paviot and Gallois, Paviot and Fayolle, Rosenblath, Dunlop, Trevithick, Dock and Warthin), in several of which the flat and short bones were involved. In six other cases (Rosenblath II, Bramwell, Gümbel, Weinberger, Sternberg, Türk) the fatty marrow was altered, either red or grayish-red. In some cases both kinds of change were present. In some cases the bones were not examined, in some others the examination was limited to a few bones, and inasmuch

as the affection of the bone marrow is not always symmetrical we cannot be sure that in the cases with negative results there were no green foci at all in the marrow.

Of the associated changes it is not necessary to mention any except tuberculosis. This was found in the lymph glands in the cases of Schmidt, Rosenblath I, II, and Koerner. In the latter Lubarsch found tubercle bacilli in the faucial tonsil and several enlarged glands in the neck.

Clinical Features. Most of the cases reported since 1893 show a general resemblance to the typical cases in the earlier series. Among 18 cases in which the clinical histories are given, early weakness was noted in 9, pallor or anemia in 11, exophthalmus in 11, swelling and eversion of the lids in another, deafness in 10, swelling of the temporal region in 9, swelling of the face in 3 more, enlarged lymph glands in 8, emaciation in 6, rapid pulse in 6. Pain was often a prominent symptom, and was most often felt in the head, eyes, teeth, or ears, or in the hips or legs. Hemorrhages in the skin or mucous membranes were noted in 8 cases. Blindness occurred four times. The liver was enlarged in 3, the spleen in 7 cases. Albumose (Bence-Jones) was present in Weinberger's case. In both of Rosenblath's it was absent. In other cases there are no evidences for or against. It is noteworthy that in the 3 cases cited the bone-marrow was altered.

Some of the cases require more detailed reference.

In Lang's case, a man, aged fifty-two years, was seized with violent pain in the head and teeth three months before admission. At the same time a hard tumor appeared on the right cheek, with obstruction of the nares and pain in the right eye, with exophthalmus and blindness.

The tumor became adherent to the skin, and ulcerated in the center. It projected into the palatine vault and the nose. It was removed by a resection of the maxillary bone, exposing a large cavity covered with green nodules, extending to the meninges. Owing to this the operation was not completed. The results were not known, as the patient disappeared.

In Bramwell's case the most remarkable feature was an eruption, beginning on the chest and spreading all over the body, consisting of flattened elevations from the size of a pinhead to that of a sixpence, often confluent. They were superficial, painless, and for the most part of a slaty gray color, sometimes yellow in the center. The gums were enormously swollen, firm and dark purple in color. The conjunctiva was infiltrated with a translucent, fleshy-colored growth. The eruption on the skin in time became yellow, yellowish-green, or distinctly green.

In Hitschmann's case there was also the combination of lesions in the mouth and skin. A man, aged twenty-six years, had a swelling of the cervical glands and enlarged spleen. The glands suppurated spontaneously, and showed no tendency to healing; the resulting ulcer had blue edges. The right tonsil was ulcerated. A bit removed from the margin showed a lymphosarcomatous structure. In two months after the beginning of the observation the tonsils and the mucosa of the pharynx, nasopharynx, fauces, and nares were greatly swollen. The blood was then normal. In two months more the skin became darker, of a pale-brown color, most intense over the cheeks and breast. A disseminated eruption appeared, with slightly elevated lesions, the size of lentils, of a grayish-green ("reseda") color, unchanged by pressure. The connective tissue of the eyelids became a pronounced grayish-green color; the scleræ also had a greenish tint. Other mucous membranes were pale-red, transparent, and finely nodular. Infiltrations formed in the soft palate, the base of the tongue, and upper part of the larynx. The tonsils were replaced by nodular tumors. There were large, hard, and almost immobile packets of lymphatic glands in the neck, axillæ, and inguinal regions. The bones were tender. There was remittent fever. The blood then showed relatively many large lymphocytes, later considerable lymphemia, with anemia, poikilocytes, polychromatophilia, and normoblasts. The patient died six months after admission. Grass-green new-growths were found in the tonsils, the mucosa of the gums, palate, nose, pharynx, larynx, and bronchi; in the cervical and mediastinal glands. The diagnosis of chloroma was made during life (1903), from the lesions in the skin.

In Schmidt's case there was a distinct green discoloration in the skin of the face and also on the body, but on the latter there were recent hemorrhages. There were also subcutaneous nodules.

The foregoing cases are interesting on account of the new features they add to the clinical picture of chloroma. It would increase too much the length of this paper to speak of the skin alterations in leucemia and allied conditions. Those especially interested will find a useful compilation in the monograph of Nékám,[1] while other interesting data are contained in the articles of G. Dieballa,[2] F. Pinkus,[3] and C. Audrey.[4]

In Gümbel's case there was transverse myelitis, due to pressure of the chloromatous masses upon the cord, and in Rosenblath's first case there was degeneration of the right posterior column of the cord in the lumbar and dorsal regions from pressure.

Sciatica was a marked symptom in the cases of Rosenblath, Harris and Moore, and Klein and Steinhaus.

In Trevithick's case tumors were discovered

1 Ueber die leukæmischen Erkrankungen der Haut. Ergänzungsheft, Monatshefte f. prakt. Dermatologie, Hamburg and Leipzig, 1899.

2 Ueber einen mit Lymphocytose einhergehenden Fall von Sarkoma mult. cutis, Wiener klin. Wochenschrift, 1897, p. 523.

3 Ueber die Hautveranderungen bei lymphatischer Leukämie und bei Pseudoleukämie, Archiv f. Dermat. u. Syphilis, Bd. l. pp. 37, 177; with extensive bibliography.

4 Journal des maladies cutanées et syphilitiques, 1902.

in the breasts, in a girl aged thirteen years. The tumors became larger. "The left breast was composed of two very hard, globular tumors, each about the size of a hen's egg, freely movable over the deep parts, but adherent to the skin. The opposite breast was represented by three similar tumors." The mammary tumors "showed through the skin as being of a dark-blue color." The patient also presented the common features of pallor, proptosis, swelling in the temporal regions, subcutaneous hemorrhages, and nodules on the sternum and ribs. Post-mortem, growths of light-green color were found connected with various bones, in lymphatic glands, kidneys, liver, ovaries, pancreas, thyroid, dura mater, and in the choroid plexus of the lateral ventricles.

Dunlop's case was the first one in which a diagnosis was made during life. The patient, a boy aged five years, was fairly healthy up to a year before admission. For fully a year patches of ecchymosis were frequently noticed under the skin. In May, 1901, pallor was obvious, and for some months before that it was observed that any scratches on the body tended to suppurate. After a wetting and chill the boy became easily tired, called out in his sleep, and snored. His appetite was poor, and he grew steadily paler and more emaciated. In August his eyes became prominent, with dilated veins on the lids. In September he became deaf. On admission, September 30, 1901, he looked very ill, and was pale, with a waxy, yellow tint. There was a profuse petechial eruption everywhere except on the face, with two larger hemorrhages over the dorsal, spinal column, and the right knee, with a yellow discoloration, as of an old hemorrhage, on the right shin. Both eyeballs protruded, but the lids could be closed. There were a few enlarged glands under the jaw, on both sides, and in the posterior triangles of the neck and the groins. The heart dulness was enlarged; there were loud hemic bruits; pulse 110, irregular in time and force. The liver and spleen were not enlarged. The urine contained a small amount of albumin. The blood: hemoglobin, 32 per cent.; red blood corpuscles, 1,800,000; leucocytes, 24,500. Lymphocytes, large preponderating, 73 per cent.; polymorphonuclears, 17 per cent.; myelocytes, 5 per cent; unclassified, resembling myelocytes, 5 per cent. A few nucleated reds.

The eyes became more prominent, the deafness worse. In the mouth a hard, purple swelling appeared on the hard palate, extending nearly the whole anteroposterior extent from the teeth nearly to the median line, with discoloration to the median line. A similar smaller swelling appeared on the lower jaw on the right side, external to the teeth. In October a smooth, rounded swelling appeared in each temporal region, reaching behind to about half an inch in front of the pinna, and in front of the outer edge of the orbit, and apparently continuing into the orbit. On October 22 the diagnosis of chloroma was made. Photophobia came on. The upper eyelids became infiltrated, especially in their outer halves, with firm, smooth swellings which seemed to proceed from under the roof of the orbit in the region of the lacrimal gland, and extend to the margin of the tarsal cartilage. In the left lower eyelid there was a tumor extending from canthus to canthus, appearing to come from under the lower margin of the orbit. The retinal veins were tortuous and moderately distended. In the right eye there was a minute extravasation of blood near the disk, and exudation into the disk and retina in both eyes. The leucocytes increased to 68,000 by November 2. A pale, greenish-yellow tumor of jelly-like consistence made its appearance at the inner canthus of the right eye, and gradually advanced over the eyeball, covering its lower half. There was a smaller similar tumor in the left eye. Frontal pain became intense; the temperature rose to 101° F., the pulse to 140. The temporal tumors seemed to become smaller. Marked optic neuritis, with linear hemorrhages, developed in the right eye, still more marked optic neuritis in the left eye. By November 12 the tumors on the eyes covered both eyeballs. The corneæ were apparently destroyed. The temporal tumors were smaller. Leucocytes, 107,000; red blood corpuscles, 815,000; hemoglobin, 12 per cent. On November 15 the eyeballs were less prominent, leucocytes 123,000, waxy pallor of face and engorgement of veins striking, sordes on lips and teeth. After coffee-ground vomiting the boy died on November 16.

The cases of chloroma with tumors of the orbit have close clinical relations with other orbital tumors, and often result in sending the patient to an ophthalmologist. But the orbital tumors do not suffice to make the diagnosis of chloroma. Besides leucemia without chloroma, lymphosarcoma, and other formations often affect the orbits, causing exophthalmus in some cases. One of us (Dock) has had an opportunity of seeing a number of these cases clinically in the service of Prof. Fleming Carrow. The most interesting one is still under observation. Examination of an excised portion by Dr. Warthin, shows a lymphomatous structure. In addition to the orbital tumors there are growths in various parts of the body, including the roof of the mouth. The leucocytes number 10,000, 40 per cent. being lymphocytes, seven per cent. eosinophiles, but without the finer details of lymphatic leucemia. Risel has given a useful *résumé* of the literature of this part of the subject.

The cases without swellings in the orbit and temporal region are of special interest in connection with the one now reported. In Weinberger's case, a boy, aged fifteen years, had rigidity of the skin and weakness of the lower extremities, following scarlet fever. The cervical and inguinal lymph glands became enlarged; there were hemorrhages from the nose and gums and in the skin, hemorrhage from the right ear, deafness, splenic tumor, dilatation of the heart, and fever.

The urine contained Bence-Jones albumose. The growths involved the lymphatic tissue almost universally, the dura and serous membranes, the liver and kidneys, and the periosteum of the vertebræ. The tumors penetrated the vertebral canal and compressed the cord.

In Sternberg's case, too, the skull was not involved, but all the superficial and deep lymphatics, especially those of the floor of the mouth, were affected. The patient died of intercurrent disease (putrid bronchitis as the result of the perforation of a softened anthracotic bronchial gland into the esophagus and bronchus), so that the case really presents an early stage of the disease and seems to bear out the author's belief of a primary focus in the soft palate and pharynx.

A marked tendency to deafness and other ear symptoms were shown by the later cases, as in the earlier ones. One of the most striking examples was shown by the patient of Koerner. A boy, aged six years, became deaf. He also had headache and double exophthalmus. Both abducent nerves were paralyzed, the cutaneous veins of the forehead distended; both temporal regions were swollen. There was choked disk. The tympanic membranes bulged; they were pale grayish-yellow. The left mastoid was tender, but not swollen. Considerable pus was evacuated from both tympanic cavities. The diagnosis was phlebitis and thrombosis of both cavernous sinuses. After a fresh puncture of the left tympanic membrane, with elevation of the temperature, a mastoid operation was performed. The patient collapsed, but revived, and the operation was finished without exposing the lateral sinus. Death occurred five weeks later, without rise of temperature, but with frequent pulse (144) and respiration (66), and with rigidity of the neck. Post-mortem, no phlebitis was found, but instead a marked chloromatous growth involving the sinuses, the base of the skull, and other parts. Koerner analyzed the ear conditions in all the (20) cases of chloroma available, with great thoroughness, and found ear symptoms in ten.

The literature of the ear complications in leucemia has grown considerably since I referred to it in my former paper. For recent cases see Kast,[1] Kümmel,[2] Schwabach.[3]

Out of the protean symptoms of chloroma cases we can separate three sets of conditions: the mechanical results of the green growths, causing many symptoms, both objective and subjective, (exophthalmus, visible tumors, pain, deafness, etc.); the toxic symptoms, as weakness, fever, emaciation; and the blood symptoms, such as pallor, hemorrhages, and alterations of the blood itself.

The latter requires more particular consideration, and more especially so because of the effort I made in my previous article to show a relation between chloroma and leucemia. I need only allude to the resemblance of many of the symptoms of chloroma to those of leucemia, especially of acute leucemia. The condition of the blood, however, is the criterion of the leucemia change, and its condition in chloroma cases requires more detailed examination.

The Condition of the Blood. Ever since Recklinghausen assigned chloroma to the leucemic group of diseases the blood has been the most important single clinical feature, but owing to the imperfect application of blood examinations in general, and failure to appreciate the nature of cases during life, the blood has not yet received as much attention in chloroma as it deserves. In five of the present series of cases the blood was not examined (Lang, Koerner, Paviot and Gallois,[1] Harris and Moore, Hichens). In two it was not fully examined, or, at all events, not fully reported. In one of these—Schmidt—it is said the blood showed simple anemia; in the other (Paviot and Fayolle) there was said to have been leucocythemia of one to three or four. This latter statement is not as definite as that of Ayres, who described leucocytosis in his case without increase of "small lymphocytes and those white cells characteristic of splenic and myelogenic leucemia." More prolonged examinations might have modified the descriptions in both cases. In Türk's case there was leucopenia with severe anemia. In the other thirteen cases the conditions were more characteristic of leucemia, though in one the leucocytes were not increased. This was the case of Bramwell, in which there were 8,000 leucocytes per c.mm., with 95 per cent. of lymphocytes, "chiefly large lymphocytes, with large nuclei and clear, non-granular protoplasm. During the month the patient remained in the hospital the blood condition remained practically the same." As Bramwell remarks, "the mere fact that the leucocytes were not increased did not exclude leucemia." In ten cases, according to the reporters, the blood resembled that of acute leucemia or acute lymphocythemia.

Examining these cases in detail we find in Rosenblath's first case: red blood corpuscles, 1,000,000; leucocytes, 300,000. "The small mononuclear lymphocytes appear in small numbers, and the polymorphonuclear neutrophiles are scanty in proportion to mononuclear forms of various sizes, the smallest of which only slightly exceed the red corpuscles, the largest reach a considerable size. The protoplasm is usually reduced to a narrow ring, the outer layer of which often stains deeply with methylene blue. Only in the large forms has the protoplasm a greater extent. The nucleus stains rather faintly, shows usually a granular or filamentous network, is round or oval, usually simple, but sometimes double. There is moderate poikilocytosis, only an occasional nucleated red corpuscle." In

1 Deutsche med. Wochenschrift, 1894, Beilage 27, p. 187.
2 Ear Disease in Leucemia, German Otological Society, 1896; Archives of Otology, vol. xxvi, p. 115.
3 Ueber Erkrankung des Gehörorg. bei Leukämie, Zeitschrift f. Ohrenheilkunde, Bd. xxxi, p. 103.

1 Paviot and Gallois are of course in error when they intimate that the blood had not been examined in any of the cases before their own.

Rosenblath's second case the red corpuscles varied from 3,700,000 to 2,300,000, the leucocytes, 40,000 to 58,000; later to 37,000. There was distinct poikilocytosis, a nucleated red cell, usually a normoblast, in almost every preparation. The leucocytes resembled those in the first case. The polymorphonuclear neutrophiles were considerable at first, but later were reduced to one-quarter or one-fifth of all leucocytes. Small lymphocytes were scanty, eosinophiles very rare. Sutherland's case (observed in 1893) had 2,200,000 red corpuscles. The leucocytes a few hours before death were "180 to a field. There was a great increase of lymphocytes, varying in size." In Stevens' case the blood count was: red corpuscles, 766,000; leucocytes, 491,600; hemoglobin, 15 per cent.; small lymphocytes, 94.6; large lymphocytes, 1.4; polynuclears, 2.7; eosinophiles, 1.3. In Gümbel's case the condition of the blood during life is not reported. Post mortem, the red and white corpuscles after sedimentation were about equal. "The great majority of the leucocytes belong to the group of large lymphocytes (Ehrlich); the rest are small lymphocytes. There are two kinds of the former. In one, two or three times as large as a red corpuscle, there is a large nucleus and, as a rule, little non-granular protoplasm. The nucleus is usually vesicular, only the nuclear membrane and chromatin network stain intensely, but some forms occur in which the whole nucleus takes blue intensely. The nucleus is usually oval and excentric, but not rarely is indented, so that it has a saddlebag form. Less frequent are cells of the same size, but with a pale, indistinctly outlined nucleus, usually resembling a shadow, and often not possible to recognize. This is the form represented by Dock as A. Fig. B. Polymorphonuclear cells are rare, also eosinophiles, and these have nuclei like those of the lymphocytes described." Normoblasts, megaloblasts, and Charcot's crystals were not found in the blood.

I have not been able to find the full report of the blood in Sternberg's case, which was to have been published in detail by Obermayer. In another place[1] Sternberg mentions it as giving the picture of acute (large celled) lymphatic leucemia. In Weinberger's case the red corpuscles ranged from 4,500,000 to 3,200,000; leucocytes, 13,000 to 72,000. In the beginning there were 86 per cent. of large lymphocytes, few polynuclears and eosinophiles, no mast-cells. With 72,000 leucocytes the large lymphocytes were still in the majority. "The blood was in all respects like that of acute leucemia. In Trevithick's case there was extreme anemia, but no count was made. "The blood was first examined three weeks before death. There was then great increase of white cells. . . . On comparing the films made at that time with those prepared shortly before death it was evident that the number of white cells in the blood increased very rapidly. The change, in fact, resolved itself into an enormously great and rapid increase of mononuclear cells. Among this crowd of mononuclear cells, which in the later stages became approximately equal in number to that of the hemocytes, there appeared a considerable number of bodies which, after careful examination, I believed to be degenerating nuclei derived presumably from defunct cells. These bodies varied in size and shape, but in some cases their dimensions were surprisingly large, and I saw several that possessed a diameter equal to six times that of the neighboring red blood corpuscles." These bodies resembled some in a preparation from a case of acute leucemia. "Some of the intact mononuclear cells found in the blood attain exceedingly large dimensions. Great variation in size is noticeable, and they seem to be distributed in groups."

The illustration given in Trevithick's article shows many cells such as occur in our present case of chloroma, as well as in many cases of acute lymphocythemia, while the degenerated cells so clearly described by the author are such as occur in leucemias of various kinds, and were particularly marked in a case of chronic small-celled leucemia reported by Dock.[1] In Hitschmann's case the blood, late in the disease, contained "relatively many large lymphocytes, later considerable lymphemia, with anemia, poikilocytosis, polychromatophilia, and normoblasts." In our own case, while the blood shows some differences as compared with many cases of acute leucemia hitherto reported, it has probably many counterparts in the latter disease. In its eosinophile cells and myelocytes it differs from Dock's (1893) case and forms a transition from many of the other cases to those of Dunlop and Klein and Steinhaus. In Dunlop's case the blood at first showed: hemoglobin, 32 per cent.; red blood corpuscles, 1,800,000; leucocytes, 24,500. The differential count was: lymphocytes, large predominating, 73 per cent.; polymorphonuclear, 17 per cent.; myelocytes, 5 per cent.; unclassified and transitional forms resembling myelocytes, 5 per cent.; a few uncleated red cells. The red cells fell in six weeks to 815,000; hemoglobin, 12 per cent.; the leucocytes rose in the same time to 123,000. Dr. J. S. Fowler has described the blood in this case,[2] and has given a somewhat different count. For example: October 5, leucocytes, 25,000; small lymphocytes, 15; large, 48.5; polynuclear, 31.5; eosinophiles, few; myelocytes, 5. November 11, leucocytes, 64,000 (Dunlop gives the number November 12, as 107,000); small lymphocytes, 15.5; large lymphocytes, 53.5; polynuclear, 16; myelocytes, 15; no eosinophiles in the last two counts two weeks apart. Divergences in leucocyte counts in different observers are, of course, very common, depending partly on staining technic, partly on different conceptions of certain cells, but the discrepancy in the

1 Verhandlungen des Deutschen patholog. Gesellschaft, 6 Tagung, 1903, pp. 30-33.

1 Moscow International Medical Congress, University Medical Magazine, March, 1898.

2 International Clinics, 1903, series 13, vol. iii, p. 225.

polynuclear counts in this case is hard to understand. Nevertheless, we can accept the reports as showing a still more distinct transition toward myelocythemia than was present in our own case.

A still greater departure from the lymphocythemic type was present in the case of Klein and Steinhaus. Here the leucocytes rose from 20,000 to 41,000. Lymphocytes varied from 40 per cent. small, 10 per cent. large, to 19 per cent. small, 47 per cent. large. Myelocytes varied between 16 and 32 per cent. The report does not describe the rest of the cells, but it is obvious that the case was not an ordinary one of mixed-celled leucemia, as the authors seem to intimate. A more distinct example of the latter occurred in a case of Türk's,[1] which I have excluded from the list of chloroma cases for the same reasons that made me exclude some other probable cases reported under the title of leucemia. In this case, a man, aged thirty-eight years, had hemorrhages from the gums, weakness, anemia, ecchymosis in the retina, enlarged spleen, and pain in the sternum. The blood examination showed: red corpuscles, 1,600,000; leucocytes, 42,000; hemoglobin, 19. Differential count: 14.75 lymphocytes, 32 polynuclear, 47 myelocytes, a few eosinophile myelocytes, no mast-cells. In seven days the blood fell to red corpuscles, 500,000; leucocytes, 58,000; hemoglobin + 10; lymphocytes, 18; polynuclears, 37; myelocytes, 37; 1 normoblast. Post mortem, there was diffuse grass-green infiltration in the bone-marrow of the vertebræ, ribs, sternum, and proximal ends of both femurs. The upper part of one humerus had reddish-gray marrow, the other long bones fatty marrow. The retroperitoneal glands were green. Here we miss the full picture of mixed-celled leucemia, especially eosinophile and mast-cells, normoblasts, and megaloblasts. But the case has an important bearing on the question of the nature of chloroma that must be considered in another connection, and illustrates the diversity of blood pictures in leucemia, which is suggested in the relatively small number of cases of chloroma. Investigations by many observers are putting it beyond question that besides the two main groups of leucemia there are many varieties, as I have held for many years. The exhaustive and authoritative article of Dr. A. O. J. Kelly, presented a year ago, makes unnecessary a repetition of the evidences now at hand.

While it is obvious that in many cases of chloroma the blood resembles that of acute leucemia, and while the symptoms are often acute, we need more exact observations. The blood examinations, as a rule, were not made early enough to determine this fact—a difficulty that occurs sometimes in non-chloromatous "acute" leucemia. There are a few interesting observations already available in chloroma. In Rosenblath's first case there were 300,000 leucocytes at the first examination, three and one-half months after the beginning of symptoms. In the second case of the same author the blood was first examined eleven days after the first symptoms, and contained 40,000 leucocytes per c.mm., increasing in eight days to 58,000, but in two months the number was lower—37,000. The patient died ten days later. In Weinberger's case the leucocytes rose from 20,000 to 72,000 in two days. In Dunlop's case they increased from 24,500 to 123,000 in six weeks. In this case petechiæ occurred early, suggesting an alteration of the blood. In our own case the symptoms indicate an anemia very early. It is impossible to tell what changes the blood passed through, but the extreme oligemia suggests grave failure of the red blood-forming organs, which might have been due to the overgrowth of the normal tissue by the morbid process, which sooner or later produced the excess of leucocytes in the peripheral blood. There was no distinct change in the number of leucocytes under observation, and it is, of course, as possible that leucocytes were more numerous at some previous period as that they rose just before the end.

From the data now available the relationship of chloroma to leucemia seems settled. That the full picture of leucemia does not always develop in all cases is to be expected. That qualitative changes will occur in the blood, and that quantitative changes appear in regard to certain common cell forms, there can be little doubt. But assigning chloroma to leucemia of course leaves many problems unsettled. One of the first questions that arises in this connection is with reference to lymphocytosis in so-called lymphosarcoma and other diseases not yet positively identified with leucemia, but with many indications of relationship. This, as well as some other questions, can only be determined by the discovery of the etiologic factors, though careful clinical observation and study of the blood may materially further the subject before that consummation has been reached.

Two other questions raised by chloroma require some attention: the nature of the color and the histologic position of the new growth.

The Color of Chloroma.—The later cases of chloroma have not advanced our knowledge of the nature and cause of the green color. No extensive examination seems to have been made, probably because the most obvious explanations had been tried and been found wanting in the earlier cases, where the ordinary chemical and physical methods were applied for the detection of possible color principles. There is apparently a difference in behavior of the color under comparatively simple conditions. Most observers state that the color fades quickly on exposure to the air (or light), as during the autopsy; but Dr. Warthin noticed an increase in the depth of the color in our last case, possibly from drying. Almost all say the color fades in various preserving solutions, and does not go into solution in the fluids. Risel, for example, found that the color was not preserved in Kaiserling's method, in

1 Wiener klin. Wochenschrift, 1903, p. 333.

which the greenish color of tuberculous foci in the same specimens retained their peculiar tint. Alt found that the tissues retained their dark grass-green color in formol solution, and the fluid itself was of a dirty-green color and looked fatty. Allowing the fluid to evaporate, large droplets of dark-green, oily substance remained, with many octahedric crystals, like calcium oxalate. The account suggests bile coloring matter, but no mention of jaundice is made.

That the color is not a post mortem phenomenon appears from some observations during life in the older series, as well as those of Lang, Bramwell, and Hitschmann in the present one. On the other hand, an origin from broken-down blood pigment is suggested by certain observations. Risel found hemosiderin granules in the tumors, and referred these to breaking down of red blood corpuscles, but he ascribed the green color not to these granules, but to some other substance of hematogenous origin. He compared the process to the "green granular pigment" found in the dog's placenta, explained by Lieberkühn and Strahl as originating in extravasated blood. Lubarsch found the color a deeper green along the sinuses in his case—"in fact, a diffuse green coloration of the sinus walls was observed in the vicinity of the chloromatous tissue." Of course this does not prove that the blood made the green color, any more than that a pigment of some other origin was deposited in those parts. Gümbel[1] quotes some experiments of H. Rücker on blood pigments, to which he might have added some other suggestive experiments, cited in the same thesis, showing the possibility of deriving green coloring from blood. This, of course, follows from the changes in subcutaneous hemorrhages, and the observations on such processes by Langhans and others.

Risel, Lubarsch, and Weinberger made it practically certain the color is not of bacterial origin, while Lubarsch was unable to find pigment granules in either sections or fresh preparations. Sternberg's results with Sudan III, showing fat droplets in the lymphocytes, does not prove that the color is due to an ordinary fat.

Paviot and Gallois made some tests of chloroma tissue with guaiac, which led them to the conclusion that chloroma contains an oxidizing diastase. They also found, however, that a similar reaction occurred with other tissues of rapid growth, confirming the conclusion of Klein that the reaction depends on the relative youth of the cells. The suggestion of Schmidt that the color is due to the shape of the cells has not found any confirmation.

Bramwell raised the question whether the color is due to the same causes in all cases of chloroma. He considered it possible that it might be due to different causes in different cases, and that it might even be due to different pathological conditions. He also thought there might be cases of chloroma without green tumors and no green lesions; "that the green discolorations, though they had hitherto been considered to be essential and characteristic features of the disease, might, in some undoubted cases of chloroma, be absent." These suggestions are not as paradoxical as they seem. They show the danger of making such a feature as color the basis of classification, especially when pertinent cases are few and the color itself is so elusive and so difficult to analyze as in chloroma. It is true that in order to deserve the term chloroma there should be a green color, but if the green color is associated with a definite structure it might be possible to make the diagnosis even if the color were absent, either naturally or as the result of preserving methods. To take a clinical example, not every chlorotic has a greenish tint, as Virchow pointed out long ago. In a number of recent cases there were new growths of ordinary color besides the green ones, as there were in some of the old ones (*e.g.*, Dock, 1893). In Schmidt's case some lymph glands showing the structure of malignant lymphoma were removed eight months before death, and showed no trace of green color.

In Körner's case some of the tumors were not green, though they had the same structure as the green ones. This was also true in Weinberger's case, and in a case of acute leucemia Bramwell found a few green lymph glands. It is therefore certain that the green color is not present in all the lesions in chloroma, and possibly that it is not present in the beginning. That the color occurs in other processes appears from the cases of Klein and Steinhaus and Türk, the earlier cases of leucemia with green lesions being left out of consideration because of a certain imperfection in the blood examinations. But the various observations of pure lymphocythemic chloroma and the two cases just mentioned, make it certain that whatever the green color is due to, it is not confined to any one particular histologic structure.

It is interesting to note that in Trevithick's case the heart clot was green, but less so than the new growths. In Gümbel's case the sedimented leucocytes were green, and there were greenish clots in the heart, but in many other cases, including Rosenblath's with 300,000 leucocytes, green clots are not mentioned.

VIEWS OF AUTHORS ON THE CLASSIFICATION OF CHLOROMA.

Most authors agree upon the main histological details of chloroma. There are certain differences regarding the size of the cells that make up the growths, some describing them as small, others large, others even as very large, but this difference is probably chiefly a matter of standards. On the other hand the interpretation of the structure is not always the same. It will be interesting to pass some of the explanations in review.

Lang made a variation when he described

[1] Zur Kenntniss des Hämatoporphyrin und seiner Derivate. Inaug. Dissert., Strassburg, 1901.

the growth in his case as a myxosarcoma, or chloromyxosarcoma. I see no reason, however, from excluding it from the statistics of chloroma, as I did in the case of Bock in the earlier series.

Schmidt thought the process, like that in leucemia and pseudoleucemia, primarily affected the lymphatic apparatus and the closely related bone-marrow. He thought the disease was without metastases.

Lubarsch thought the tumors so much like lymphoma and lymphosarcoma, histologically, that but for their green color the possibility of anything but lymphoma would never have been entertained. But he would separate chloroma, as well as lymphosarcoma and tumors of that kind, which seem to have a toxic or infectious origin, from sarcoma and other autogenous tumors. "The former are merely a manifestation of a general diseased condition of the organism. Though they may develop in large numbers in the body, each tumor must be looked upon as a primary condition and not as a metastatic formation depending on the dissemination of some primary autogenous growth; while they usually have a predilection for lymphoid tissue, they have been found in other parts of the body." Lubarsch, like most recent authors, agrees that Dock was right in emphasizing the differences between ordinary periosteal sarcoma and chloroma.

Paltauf,[1] who discussed the subject in 1897, placed chloroma, with leucemia, pseudoleucemia, and myeloma, among the lymphomata or lymphosarcomata in the sense of Kundrat, and more definitely under lymphosarcoma as an appendix, and he suggested that it should not be spoken of as a sacroma. Since the view of Kundrat has strongly influenced many in their opinions, and yet has not been universally accepted, it may be well to explain that author's conception of lymphosarcoma.[2] According to Kundrat, lymphosarcoma arises from lymph glands or from the follicles of a mucous membrane, always from a group of follicles; and though it may long remain localized there, it in time passes into other lymph glands or follicles, breaking through the capsule and infiltrating the surrounding tissue. The infiltration proceeds more or less rapidly according to the tissue affected, most rapidly in loose tissue, under the surface, on and in mucous membranes and serous membranes, so that in hollow organs large areas are involved, but usually not leading to stricture, rather to dilatation. Distant locations are involved, somewhat resembling metastasis in other tumors, but never causing nodules, rather infiltrations. One reason why Kundrat rejected the idea of metastasis is that the usual seats of metastatic cancers and sarcomata are not affected,—that is, the internal organs—but rather the intestinal canal. Metastases by way of the blood circulation rarely occur, also ruptures into bloodvessels; the latter are more likely to be compressed and obstructed. However, secondary thrombi occur. Unlike leucemia and pseudoleucemia, lymphosarcoma does not have diffuse infiltrations of the liver and spleen. These organs are more likely to be small, in consequence of marasmus. The bone-marrow is also not affected.

(To be Continued.)

1 Ergebnisse der allg. Path. und path. Anat., III Jahrg., 1896.
2 Ueber Lymphosarkomatosis, Wiener klin. Wochenschrift, 1893, No. 13.

MEDICAL PROGRESS.

PHYSIOLOGY.

The Effect of Formaldehyde and Calcium Chloride on the Hemolytic Power of Serum.—Since it has been shown that the hemolytic power of foreign serum may be destroyed or attenuated in vitro by the addition of small quantities of formaldehyde, calcium chloride and other substances, C. C. GUTHRIE (*Am. Jour. Physiol.*, September 1, 1904) thought it of interest to investigate the effect of the intravenous injection of formaldehyde and calcium chloride. Certain preliminary experiments were performed with the following results: Slight variations in both the rate of hemolytic activity, and the total hemolytic power of serum of different animals of the same species (dogs), for washed rabbit's corpuscles were observed. Age, sex, weight, nutrition, breed and pregnancy appeared to have but little or no influence in the hemolytic action of the serum. Hemorrhage, asphyxia and excess of anesthetic (ether) have little or no effect in the hemolytic action of the serum; nor has the subjecting of dog's serum to a temperature of 5° to 10° C. for seventeen hours and then thawing. The injection of formaldehyde causes a moderate though decided decrease in the hemolytic power of the serum. The decrease is most marked in the serum from blood drawn immediately after the injection is finished, the hemolytic power of the serum gradually approaching normal after the initial inhibition, which is abrupt. Calcium chloride produces the same effect, except that the inhibition of hemolytic power is greater for calcium chloride in the proportions injected for formaldehyde.

The Reducing Action of the Animal Organism under the Influence of Cold.—The application of intravital staining methods to the study of this problem was made by C. A. HERTER (*Am. Jour. Physiol.*, September 1, 1904). If a living rabbit is infused with a solution of methylene blue, one notes during life and after death a variability in the reducing power of the different kinds of cells. The lungs, liver, suprarenals and gray matter of the central nervous system reduce methylene blue to its colorless leuco-base during life. The muscles, spleen, kidneys, and connective tissues reduce less actively. After a rabbit has been cooled by means of cold wet cloths, the intravenous infusions were made into the jugular vein. An inspection of the pectoral muscles showed that they were blue in color. The muscles of the control animal were likewise blued, but the coloration was less than in the cold animal. After the close of the infusion, the blue present in the muscles of the normal animal is gradually reduced to leuco-methylene blue, whereas the reduction is distinctly slower than in the case of the cooled rabbit. On exposure to the air or after treatment with oxidizing agents there is a return of color in the muscles of the normal animals, which indicates that the differences in color are due chiefly, if not wholly, to differences in the power of reduc-

tion, and not largely to the transportation of the dye. Cold causes a marked lessening in the reducing activity of the gray substance of the brain, cerebellum and other central nervous organs. The author emphasizes the following conclusion: A considerable fall in body temperature is attended by a diminished reduction of methylene blue to leuco-methylene blue, and this result is particularly striking and unequivocal in the case of the muscles (including the heart and diaphragm) and the gray substance of the central nervous system.

The Elimination of Endogenous Uric Acid.—The uric acid eliminated by the organism has two sources: (1) food containing purin bodies, such as meat, and (2) the disintegrating cells of the body. The uric acid originating in the former is known as exogenous, while that originating in the latter is termed endogenous uric acid. E. W. ROCKWOOD (*Am. Jour. Physiol.*, September 1, 1904) conducted a series of experiments in order to verify the conclusions of Burian and Schur, namely, that the endogenous output is variable for different individuals, but constant in quantity for the same person. He found this to be the case; there is a marked individual factor in the output of uric acid on a purin-free diet. This varied far less than either the elimination of nitrogen or of phosphoric acid. The relative individual constancy is the more striking in view of the marked difference in the composition of the diets at different periods. The importance of the individual factor in contrast with the dietetic factor is seen in the comparison between the output of different persons living on precisely the same diet. A considerable increase in bodily exercise does not affect the uric acid output noticeably. In children, in proportion to body weight, the amount of endogenous uric acid eliminated is about the same as in adults.

Action of Depressor Nerve.—Since the opinions as to the real function of the depressor nerve are still divided, C. HIRSCH and E. STADLER (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 3 and 4) have attempted to solve the problem with a number of interesting experiments. When the nerves were divided a short increase in pressure invariably followed, but this is sometimes preceded by a short stage of lowered pressure, probably due to initial irritation of the nerve. The results are no different if the animal was first curarized, or if the aortic valves were so injured as to bring about an insufficiency or where an artificial stenosis of the aorta was created. Increased viscosity of the blood or artificial plethora were without any influence. It is probable that the depressor nerve exercises its function merely upon the first part of the aorta, preserving a certain amount of tonic spasm, so as to prevent overdilatation with increased blood pressure.

The Fate of Strychnine in the Rabbit's Intestine.—It was recently reported by Salant that the contents of the cecum of rabbits are capable of destroying strychnine. R. W. HATCHER (*Am. Jour. Physiol.*, October 1, 1904), finds that this is not the case; that strychnine, after having been mixed with the cecal contents, may still be detected, though with difficulty, and that this difficulty is to be ascribed to the formation of compounds of strychnine with organic constituents of the intestinal contents.

The Physical Relation of Chloroform to Blood.—Conclusions which are substantially identical with that arrived at by Moore and Roaf, are drawn by A. D. WALLER (*Proc. Royal Soc.*, July 19, 1904) from his recent researches on the above subject. They are that the absorption of chloroform vapor is greater by blood than by saline, and that blood acts as a special carrier of chloroform to the tissues just as it acts as oxygen carrier. The combination which certainly takes place between chloroform and protoplasm may possibly be accounted for on the lipoid theory (the union of chloroform and "lipoids"). The question whether chloroform can combine with all protoplasm indifferently or with its fatty constituents (lecithin, cholesterin) more particularly, is a subsidiary issue, in respect of which the above observations contain no decisive evidence. On the one hand, is to be seen the fact that all protoplasm is subject to the influence of chloroform, and on the other hand the fact that all protoplasm is associated with fatty constituents of which lecithin is the most universal representative. Lecithin is widely distributed in vegetable as well as in animal protoplasm; it is present in blood serum, which, as shown by Moore and Roaf, has a solvent power toward chloroform not far short of that possessed by blood.

The Function of the Cecum and Appendix.—The cecal appendages do not exist in fish, batrachians and reptiles, the small and large intestine forming a continuous tube. WILLIAM MACEWEN, in a voluminous paper (*Lancet*, October 8, 1904) states that the digestion in carnivorous birds and animals takes place principally in the stomach and the small intestine. The ceca being rudimentary or absent, while in the herbivora, the cecum is enormously developed and in the solipeds, it is the chief digestive organ, the stomach occupying a secondary place. Man, if not an omnivorous animal, is at least a carnivorous and herbivorous one. Therefore, one would expect him to possess, as he does, not only a stomach and small intestines, but also a cecum; the cecum being concerned largely with the digestion of vegetable food, and as this type of foodstuff consumed by man is of the most tender variety the cecum is of only moderate size. It is an interesting fact that in at least one patient the loss by operation of the cecum, iliocolic valve and a large portion of the ascending colon was necessitated by infection of the part, an obstinate diarrhea, which occurred without any apparent cause, seemed to have a very definite relation to the excision. As to the nervous mechanism of the appendix, although it is regarded as a mere diverticulum of the cecum, nevertheles both its nervous and vascular supply is more related to that of the small intestine than of the colon. Inasmuch as the circular muscles of the cecum are continuous with those of the appendix and the longitudinal cecal bands end on the appendix, it is not difficult to understand that the nervous mechanism of the appendix may initiate the larger movements of the cecum by first inducing movements in the appendix. Undoubtedly the appendix is subject to the same cerebral government, so far as its motions go as the small intestine. In the cecum and appendix, the glands of Lieberkühn are very numerous and well developed. In fact, they are packed so closely together that no room is left for absorption purposes. This in itself seems to point to the cecum and appendix, having a more purely digestive than an absorbing function. The succus entericus in the small intestines is of great importance in furthering digestion, it being well known that the proteolytic function of the pancreas is particularly favored by it. Pawlow considers it to be a ferment of other ferments, which he names enterokinase. Succus entericus, however, is not the only agent at work in the disintegration of a cecal pabulum. Micro-organisms undoubtedly play a very important part in disin-

tegrating by their metabolic processes many substances which have resisted the action of body digestants. Bizzozero has shown that the cells of the appendix in healthy rabbits contain enormous numbers of degenerative micro-organisms. Apparently the cells of the solitary follicles of the appendix have a controlling action on these organisms, and it is not unlikely that one of the appendicular functions may be to maintain cultures of these organisms to perform their functions upon the cecal fluids. It is, therefore, not unnatural that the determining factors in causing appendicular inflammation are usually of a digestive type. Deaver states that appropriate inquiry will elicit a history of such disturbances in almost all cases. Indeed, it is not improbable, because of the close relation between the appendix and the cecum through the superior mesenteric plexus, that a vast number of so-called cases of indigestion, which are heedlessly attributed to gastric disturbance, are in truth purely reflex manifestations of disturbed cecal and appendicular digestive functions. The author concludes that the mode of life, its hurry and its hygienic improprieties, are in a large part he cause of appendicular disease.

PATHOLOGY AND BACTERIOLOGY.

Lesions Produced by Tetanus Toxin.—The experiments of R. Odier (*Arch. de Méd. Expér.,* July, 1904) show that tetanine causes the degeneration and later the destruction of the motor end plates in the muscles. The axis cylinder of the nerves which convey the toxin are the seat of an anatomical degeneration proportional to the dose and the concentration of the toxin, as well as to the time which has elapsed since the introduction of the toxin into the organism.

Etiology of Macrocheilia.—For a long time it has been recognized that abnormal thickening of the lips can be brought about by two very different causes, viz., inflammatory reaction and the presence of neoplastic growth. Daniel Eisendrath (*Annals of Surgery,* September, 1904) states that the former cause is by far the more frequent. It is common in so-called scrofulous children, is very prone to relapse and is essentially of a chronic nature. It is associated with immense hypertrophy of the mucous gland, as well as of an increase of all the tissues which constitute the lip. Lymphangiomata have usually been considered to represent the type of tumor most frequently found. In this respect hypertrophy of the lips due to this cause is almost identical with macroglossia. The author's case, which is probably the second one on record, the first having been operated upon by Fränkel, has the following history: The patient was a young man, sixteen years of age, who suffered from a double ptosis as well as from a disfiguring thickening and protrusion of both lips. The anti-operative photograph presented shows the condition to have been extreme. His early history was negative. He was an only child and had always enjoyed good health. At the age of ten his parents began to notice a moderate thickening of the lips, which had continued uninterruptedly for six years. The physical examination of the parts showed that the skin covering the region was smooth. The lip was soft, not tender, and otherwise negative. Removal of as much of the tumor as possible was advocated, followed by a subsequent treatment with hot-water injections. The tumor was extremely vascular, and immediately on section a surprising number of little concretions, the size of a bird shot, streamed out of the wound. The author believed these little masses either to be small lipomata or simply normal fat. That this tentative diagnosis was erroneous became evident on microscopical examination. These tumors were seen to consist uniformly of glandular tissue precisely similar in type to that of the normal mucous gland of the lip.

Human Piroplasmosis.—The sporozoan parasite discovered by Donovan and classified by Laveran and Mesnil in the genus *Piroplasma,* is described, with an admirable colored illustration, and the history of the discovery of the parasite is given in a long article by C. Donovan (*Lancet,* September 10, 1904). He says that on June 17, 1903, he first found these organisms in splenic blood. In one year there were admitted to his wards seventy-two cases suffering from this disease, all of which were diagnosed by examination of blood from splenic punctures. Of this number, the death rate has been 30.55 per cent. The disease is exceedingly rare among Europeans, it being particularly prevalent in the dirtiest portion of the native quarter in the city of Madras. The sexes are equally amenable, and age is no bar to infection. Probably the reason that Europeans are so rarely infected is that they are usually well housed. The history of the discovery of the parasite was as follows: Donovan noticed that a great many cases passed through his wards which had many points in common with chronic malaria, and which, although registered as such, did not seem to the author to be true malaria on account of the absence from the peripheral blood of the usual parasite. In all these questionable cases the spleen was enlarged. Donovan believed that possibly the conditions might represent some hitherto unobserved stage in the malarial organism. With a view to determining this, he took smears of blood from the spleen post-mortem. He at once noted that the peculiar round and oval ring-like little bodies, which were characterized by two masses of chromatin situated on opposite poles, were different from anything ever before recognized as malarial hematozoa. He still believed, however, that he had discovered the long-sought-for resting-stage form of the malarial parasite. A splenic puncture during life proved that these curious bodies were not as Donovan had suspected they might be, post-mortem degenerations of splenic pus cells. It is most interesting to note that these piroplasms, when found in the peripheral blood, a matter of very rare occurrence, and only when the temperature ranges between 102° and 104° F., are of a very different form from that presented by the same parasite in the spleen. The number found in a single field will vary from one to thirty or more, although occasionally in well-marked cases even, great care has to be taken in finding the parasite. The number found, although varying with the amount of blood taken up in the syringe, does not appear to be in any wise dependent upon the severity of the disease nor upon the size of the spleen. Altogether Donovan has practised 110 punctures and has made this very interesting deduction from the series: One death unquestionably resulted from the simple operation. Puncture of the spleen of a fairly healthy man was made at 8 A.M. He seemed comfortable at three o'clock, when he was allowed to get up from bed. While going to get a drink of water he slipped and fell and was picked up dazed. Two hours later he died in extreme dyspnea. Post-mortem examination showed an extensive intraperitoneal hemorrhage. Calcium chloride has been ad-

minstered to all the cases since operated upon, and so far with apparent good results.

A New Color Reaction for Sugar.—A new test in which orcin is used is described by A. Neumann (*Berl. klin. Woch.*, October 10, 1904). He claims that this is not only a typical pentose reagent, but may also be used for the differentiation of other members of the group. The method is as follows: Ten drops of the watery solution to be tested are mixed with 5 c.c. of glacial acetic acid and a few drops of a five per cent. alcoholic solution of orcin. This mixture is brought to a boil, and then concentrated sulphuric acid added drop by drop. The test tube must be thoroughly shaken after every five to ten drops, otherwise the fluid will spurt from the tube. The acid is added until a distinct color appears after shaking. This depends on the concentration of the sugar solution, but even in weak solutions it becomes evident by the addition of from 40 to 50 drops. It is useless to add more than 50 drops, otherwise the orcin is decomposed and a yellow color appears. As soon as a distinct color appears, no further acid should be added, otherwise a mixture of colors results, or else the color becomes too deep for spectroscopic analysis. The fluid should be allowed to cool before determinations of color by the eye or the spectroscope are made. If the color is too deep, the addition of acetic acid will dilute the fluid without changing the color. The different varieties of sugar give the following colors: arabinose, violet red; xylose, when warm, a violet blue; when cold, blue; glycuronic acid, when warm, green; cold, greenish blue; glycose, brownish red; fructose, warm, brown; cold, yellowish brown. When the test is applied to diabetic urine, even in the presence of slight amounts of sugar, an intense brownish-red color appears, whereas in normal urine there results a pale brown and green tinge, which is probably due to the mixture of colors from traces of glycuronic acid and glycose.

Origin of Blood-Platelets.—By means of a special combination of eosin and methylene-blue, K. Priesich and P. Heim (*Virchow's Archiv*, Vol. 178, No. 1) were able to detect in blood-platelets a ground substance, filled with red granules and a surrounding rim of protoplasm which stains like the red cells. The red cells and less often the large mononuclear leucocytes, contain blood-platelets inclosed in their protoplasm. There are, however, distinct differences in staining between these included elements and the nuclei of the red cells. The position in centric or eccentric and sometimes the various stages of extrusion may be observed. Various experiments made to determine the nature of the substance of which the platelets were made up, proved that this was chiefly nuclein. If two ligatures are applied to a large vessel and the stagnating blood be examined after a certain time, the bodies are not increased in number, hence they probably occur as such in the circulating blood and do not precipitate out when the blood is at rest, as has been stated. Great importance has been attributed to the fact that if sublimate is allowed to act upon blood, structures resembling platelets are formed in great number from the red cells. These are not, however, true platelets, for they can also be obtained from the blood of chickens, which never contains platelets. The above facts together with the observation that animals whose red cell are normally nucleated, do not possess platelets, makes it very probable, that the latter are merely the degenerated and extruded nuclei. When the bone-marrow of young animals was examined, many nucleated red cells were found but among these was a large number whose nuclei stained like the platelets normally do, so that the various transition stages between both could be well studied. Both red cells and platelets are destroyed in the spleen, for if this organ be examined, large conglomerations can generally be discovered. The platelets are not indispensable for the clotting of blood but, as they are degenerated structures, they are the first to show those chemical changes which are necessary for the production of clotting.

The Formation of Glycuronic Acid in Man.—The results of a series of analyses of the urine in a case of acute cocaine poisoning made by J. Wohlgemuth (*Berl. klin. Woch.*, October 10, 1904) seem to explain the appearance of this substance. The patient had swallowed, by mistake, 0.75 gms. of cocaine, and was soon in a condition of extreme tachycardia and dyspnea. A gradual recovery took place in about two weeks. It was found that large quantities of phenoglycuronic acid were excreted, because as a result of the cocaine poisoning, the powers of oxidation were diminished and the body was unable to oxidize the sugar as it would have done normally, as well as the glycuronic acid due to the presence of the cocaine and the camphor which had been administered as a stimulant. A part of the sugar as well as the glycuronic acid entered the urine unchanged. The condition improved from day to day, as became evident from the gradual decrease of the sugar. As the glycuronic acid possesses a great affinity for the phenol, which under normal conditions enters into other compounds, it was excreted in the urine as phenolglycuronic acid. The case is interesting from the fact that it may throw some light on the hitherto obscure question of the primary origin of glycuronic acid.

Pulsating Gangrene of the Lung.—This is a morbid condition which has previously not been described. It is analogous to that rare affection pulsating empyema. John Lindsay Steven (*Lancet*, October 15, 1904) says that his case of pulsating gangrene is related to pulsating empyema only by the clinical fact of pulsation. There is a wide literature from prominent observers on this last disorder. West, McDonnell, Diculafoy, Comby, and others having contributed to the subject. A case of pulsating empyema occurred in a woman thirty-seven years of age. On inspection of the anterior chest, moderate fulness was evident from the level of the second space downward, so that no intercostal spaces were visible; percussion was everywhere normal, and the respiratory murmur was also unchanged. The general history and appearance seemed to point to an acute pneumonia. The patient developed hemoptasis, with a temperature of 103° F., which was markedly irregular and septic. The hemorrhages were continuous and the fetor of the breath marked. On autopsy the left lung was found to be firmly adherent from apex to base, projecting through the left aspect of the pericardium, a fluctuating swelling was found, bounded below by the diaphragm and internally by the adherent left lung. This was in a position to receive the systolic shock to the heart and was transmitted to the chest wall through the semifluid contents of the gangrenous cavity. The heart was neither hypertrophied nor fixed and the swelling and pulsation referred to was undoubtedly due to the peculiar fixation by adhesions of the lungs to the chest wall.

Carotid Body.—From the examination made by J. Funke (*Proc. of Path. Soc., Phila.,* September, 1904) it is not possible to believe that the carotid body is present as often as is generally maintained. Of the eight fetuses examined, it was present only once. A number of animals examined presented no such structure, and in one fetus a cervical ganglion occupied the position of the body. When present, the organ is enclosed in a vascular fibrous body from which bands penetrate into the interior, dividing the parenchyma into two halves. These halves are again separated into lobules, which are composed of cells having no definite arrangement. They are large, closely set, with abundant, poorly-staining protoplasm, and large, oval nuclei. Rarely they are separated by a delicate reticulum and exhibit gland-structure. An intimate relation with minute blood-vessels is everywhere evident. Tumors of the carotid body are rare, and generally occur in adolescence and adult life. In the fifteen cases reported, the youngest patient was eighteen years and the oldest sixty years. Neither sex seems predisposed. In two there was a family history of malignant disease. One of the tumors was first noticed after the extraction of a tooth and fracture of the inferior maxilla. This patient had a history of inflammation of the throat and glandular swelling. In another patient there was a history of tonsillitis. It is generally conceded that the body develops until the age of puberty, when it either atrophies or arrests in development. If the body continues to grow, a tumor is formed which generally belongs to the class of peritheliomata. These have been mistaken for tuberculous glands, liponia, sarcoma, aneurism or cyst of the neck and are generally malignant, since recurrence after extirpation has been reported.

Cause of Death After Double Nephrectomy.—If both kidneys are removed from a rabbit, the animal will remain alive for about a hundred hours in comparative good health. Death is usually preceded by paralysis of the hind limbs, and convulsions are rare. In order to determine the cause of death, H. Couvée (*Zeitsch. f. klin. Med.,* Vol. 54, Nos. 3 and 4) injected the blood and the blood serum of these rabbits into both healthy and nephrectomized animals, but no symptoms were noticed. The same negative results were obtained with the sterile extract of liver, kidneys, muscles and brain; in fact, it seems as if all these substances were harmless. Since the freezing point of the blood was considerably diminished in all cases, the author concludes that the real cause of death is the increased osmatic tension.

Bacteriological Study of the Throat in Scarlet Fever.—Streptococci and staphylococci were found by J. F. Schamberg and N. Gildersleeve (*Proc. of Path. Soc., Phila.,* September, 1904) in the vast majority of cases of scarlet fever, and the first mentioned organisms also frequently in apparently healthy throats. Both germs are undoubtedly often concerned in the complications of the disease, but are not to be looked upon as the specific agents. The diplococcus described by Class as the cause of the disease was found in but a comparatively small percentage. The interesting findings of Mallory of protozoa-like bodies will doubtlessly stimulate research along these lines. It is quite possible that the failure in the past to discover the contagium vivum of the disease, has been due to the fact that almost exclusive search for vegetable parasites has been made.

Pancreas in Diabetes.—The present knowledge of the relation of the pancreas to diabetes is summed up as follows by E. Sauerbeck (*Virchow's Archiv,* Vol. 177, supp.). In every normal body sugar metabolism is regulated by means of the liver, the nervous system and the pancreas. Changes in the liver may bring about hyperglycemia and glycosuria directly by an increased conversion of glycogen into glucose. The nervous system seems to have a stimulating, the pancreas an inhibitory effect upon this mechanism, since certain injuries to the brain and changes in the pancreas may lead to glycosuria. This latter organ exercises its influence upon the liver by means of an internal secretion, which is probably elaborated in the islands of Langerhans. These are highly vascular, and their characteristic cells stand in intimate relation to the vessels. Their specific nature is also evident from the fact that they resist many lesions which invade the parenchyma of the pancreas. It has been proven by experiment that diabetes will not occur as long as the islands are preserved. They present severe lesions (atrophy, hyaline changes) in almost all cases of diabetes, yet there is a certain percentage where liver, pancreas and nervous system are absolutely normal and only functional changes can be held responsible. The functional disturbance, however, may also reside in the brain or spinal cord. This theory of disturbed function without lesion applies especially to the hereditary forms of the disease in young individuals or in patients with marked symptoms of neurasthenia. By means of specific cytolysins it may be possible in the future to exclude one of the two components of the pancreas and thus to discover the true function of each.

OBSTETRICS AND GYNECOLOGY.

Heart and Circulation in Pregnancy and Puerperium.—The result of extensive clinical studies made before and after labor are published by A. Stengel and W. B. Stanton (*Univ. Penn. Med. Bull.,* September, 1904), and their conclusions may be summarized as follows: They believe that there is not during pregnancy any hypertrophy of the left ventricle nor special increase in its work. The increase in dulness toward the left is due to the upward displacement of the diaphragm and the consequent displacement of the heart in an upward and outward direction. The comparative outlines before and after labor, made from a series of tracings, show a rapid return to the normal position. A noteworthy fact was a frequency of the increase in the extension of dulness towards the left in the second and third interspaces and by the frequency of distinct pulsation in the same area. In the absence of any evidence of retraction of the lung, and in view of the fact that the pulsation discovered in this region was distinctly marked, it is evident that this condition of things is ascribable to distention of the conus arteriosus and root of the pulmonary artery. The frequent presence of a systolic murmur, most clearly audible in the same area, further substantiates this opinion. Moreover, the position of the right border of the heart seemed on the average too far toward the right, which, with the conditions present at the root of the pulmonary artery, convinced the authors that there is probably during the latter months of pregnancy some continuous dilatation of the right ventricle, though this is apparently of a very moderate degree. Such a state of affairs can hardly be regarded as surprising when it is remembered that the upward displacement of the diaphragm and pressure upon the lungs must necessarily increase the difficulties of the pulmonary circulation. The condition of the abdominal recti is important from the point of view of the circulation. In multiparæ separation of the recti materially lessens the tendency to displacement of

the diaphragm, and diminishes in a corresponding degree the displacement of the heart during pregnancy. After delivery this diastasis of the recti, however, may occasion a downward displacement of the heart, and the contrast before and after labor may be quite as pronounced as in primiparæ, though the first position occupied may not have been far from the normal. The investigations of the blood pressure show conclusively that there is no material increase of this pressure before or after labor. During labor a notable increase was sometimes found, similar to that observed by others.

On the Behavior of Leucocytes in Gynecological Diseases and Labor.—Whereas the value of a hyperleucocytosis in the presence of a hidden suppuration has lately been regarded as of lessened importance in surgery, it is claimed by Pankow (*Archiv f. Gyn.*, Vol. 73, No. 2) that careful observations have convinced him that it is of greater moment in gynecological diseases. In every case of inflammatory adnexal disease, if the leucocytes number more than 10,000, and all other causes for their increase can be eliminated, purulent inflammation of the adnexa is always present. But if the number is below 10,000, in chronic cases, suppuration cannot be excluded with certainty. The leucocyte count must always be considered in connection with the pulse and temperature. When carcinoma is present there is usually no leucocytosis, likewise none in myomata, but after considerable bleeding has taken place in the latter instance, a leucocytosis is evident. In 24 operative cases, Pankow demonstrated a leucocytosis in 22, and this he attributes to the opening of new channels of infection by the operation and the chemotaxic irritation of the cell necrosis in connection with the wound and the absorption of the products of the latter. The leucocytosis regularly diminishes if no wound infection or other complications set in. In labor, during the period of activity of the pains, the leucocytosis can be observed up to the time of the rupture of the membranes. Where the pains are severe and the labor prolonged, a further increase can be noted after the rupture, extending even into the first hour after the placenta is delivered. During the first twelve hours after labor, the number of leucocytes returns to the normal.

Etiology of Prolapsus Uteri.—An interesting theory as to the causation of this condition is advanced by O. Burger (*Archiv f. Gyn.*, Vol. 73, No. 2). He reports a case where in a newborn child there was complete prolapse of the vagina and uterus, degeneration and atrophy of certain groups of muscles in the lower extremities, atrophy of the pelvic floor musculature, as well as sensory paralysis of the lower limbs and the trunk as far as the upper border of the spina bifida. Burger believes that this case will explain the cases of uterine prolapse occurring in women who have never born children (about 3.5 per cent. of the cases). In these instances the factors usually brought forward are insufficient, such as manner of living, occupation, venereal excesses, improper nourishment, inflammations and tumors. Freund attributes the condition to infantilism, others to an insufficient development of the peritoneum. In searching the literature, the author has found 12 cases where this dislocation of the organs was already noted in the newborn child,—ten of these also presented a spina bifida. He therefore sets aside the supposed influence of an infantile condition or the constitution of the peritoneum, and concludes that the association of spina bifida, atrophy of the pelvic floor muscles, and genital prolapse, can be attributed to some disturbances of the sacral nerves which results in the production of the anomalies in question. This view seems to be confirmed by instances seen in older individuals, where some injury affecting the sacral plexus is followed by not only a primary nervous disturbance but also a secondary uterine prolapse.

PEDIATRICS.

Alcohol and Children.—There are manifestly two ways in which alcohol can reach the child, according to G. Carpenter (*Jour. of State Med.*, October, 1904), namely via the parent and by direct access. In the former case the action can be subdivided into (*a*) its action on the sperm or ovum, and (*b*) its action on the maternal organism. Alcohol taken by the stomach may be detected in the ovary or testicle within a very few minutes. The toxic action on the sperm or germ cell may be inferred from the frequency of alcoholic history in the parents of the victims of epilepsy, idiocy imbecility and moral perversion, and to the increased predisposition to the occurrence of organic disease, to various infections (particularly tuberculosis), and to the production of various congenital malformations. One of the causes of the inability on the part of the mother to nurse her child, is ancestral alcoholism. A great part of infantile mortality is to be attributed to the latter phase of degeneration. Alcohol may be traced in the milk within twenty minutes of its ingestion, and for seven or eight hours afterward. Acute or chronic alcoholic poisoning in the infant may be thus caused. The following superstitions and practices are responsible for the administration of alcohol to infants and children. The belief that alcohol will stimulate the child's growth, prevalent in Europe; that gin will prevent colic; that brandy will appease the crying infant. The use of alcoholic confections is not uncommon. Infantile dipsomania is not rare and has been acquired through parental encouragement. The author warns the profession against the indiscriminate prescribing of alcohol for sick or convalescing children without laying emphasis upon the exact amount to be given. The danger of acute alcoholic poisoning by the direct absorption of alcohol from compresses used to reduce fever, must be borne in mind. Even alcoholic fumes have been known to affect young infants. The commonest cause of cirrhosis of the liver in children, is the ingestion of alcohol in repeated doses. There is no evidence to show that Bright's disease or fatty heart is ever produced by this agent in the young. Alcohol expends its main influence in the child upon the nervous system—upon the higher nerve-centers, especially in relation to retardation of development. The outcome of the discussion on the therapeutic value of alcohol seems to be that, although many individual points are still undecided, the weight of evidence tends toward the view that alcohol is a toxic drug, even in small quantities. Any evidence in favor of the employment of alcohol in medicine rests on a clinical foundation. Experiment has demonstrated that immunity in various infections is lowered by the use of alcohol; this has been shown by Abbot, with staphylococci; by Beard, with diphtheria, and by Nicloux, with rabies and tetanus. Many physicians now resort for stimulation to strychnine and caffeine rather than to alcohol. This drug is a greater poison to the child than to the adult.

"Shorten the Time from the Cow to the Baby."—The laws prescribe all manner of requirements for

dairies, cows and the constituents of their milk, but little or nothing is said as to the age of the milk. A. R. Raynolds (*Am. Med.*, October 22, 1904) calls attention to the fact that twelve-hour milk is worth much more from a dietetic standpoint than twenty-four-hour-old milk, while thirty-six-hour milk not only has little food value, but is positively harmful to the young. This applies only to milk in bulk, however,—bottled milk keeping fresh for several days on ice. Milk begins to deteriorate, in digestibility and wholesomeness, from the moment it is exposed to the air. In twenty-four hours after being drawn there will be 400,000 micro-organisms to the teaspoonful, unless checked by cold. The food value is also impaired and the milk rendered poisonous by the growth of these bacteria, so that the young are not only starved but poisoned. Milk intended for the young should be bottled and in the hands of the consumer within twelve hours after milking. The writer claims that no legislation will be enacted making the delivery of twenty-four- to thirty-six-hour-old milk illegal until the public is educated to a knowledge of the evils of stale milk and its murderous effects upon the young.

GENITO-URINARY AND SKIN DISEASES.

Gonorrheal Phlebitis.—A case of this rare complication of gonorrhea is reported by Rosenfeld (*Berl. klin. Woch.*, June 9, 1904), in a young man who developed a marked phlebitis in the lesser saphenous veins about four weeks after an attack of acute gonorrhea had apparently subsided. This gradually disappeared with the use of evaporating lotions. From a study of 26 cases thus far reported, it seems that the affection is usually present in young men during the subacute stage of a first attack of urethritis. In most of these cases an arthritis was also present. Varicose veins were seen in only one instance, so that this condition cannot be looked upon as a predisposing factor. The saphenous vein seems to be most often involved. Pain and edema are the main symptoms and six weeks the usual duration of the affection. The writer believes that the infection is due to the rupture of some hitherto unrecognized focus, probably in the prostate, from which the septic material enters the venous system. The treatment is the same as that of phlebitis in other parts.

Treatment of Urticaria.—The etiology of urticaria is sometimes very simple, sometimes very complex, say F. Tremolières (*Ann. de la Polichnique de Paris*, August, 1904). Acute urticaria may be caused by an irritating parasite, such as a flea or bed bug, or by some irritating plant. Frequently the eating of certain food, such as shellfish, or certain medicines, such as balsams or chloral. Treatment consists naturally of a light purgative, some intestinal antiseptic, such as salol, or benzonaphtol, and quinine or alkalies. Low diet for a few days is necessary. For the pruritus, carbolic or evaporating lotions are necessary. The following prescription is useful:

℞ Carbolic acid, pure..... 2 grams
Glycerin ..... 50 grams
Water. .....150 grams

Lotions of chloral hydrate, 5 to 200, neutral dusting powders of chalk, starch, zinc oxide, with camphor finely pulverized, one to two per cent. A useful ointment is:

℞ Zinc oxide.....3 to 5 grams
Cocaine hydrochlorate (or menthol),
0.3 to 0.60 grams
Vaselin. .....30 grams

Hot or cold baths are not as useful as tepid baths. If the pruritus is rebellious it is necessary to have recourse to a protecting envelope, either an application of a paste or plaster. In the grave urticaria of auto-intoxication prompt treatment by laxatives or emetics, and in case of collapse, subcutaneous injections are necessary. Edema of the glottis is a serious danger of acute urticaria. Hot foot baths and hot applications to the neck, hot fumigations and the administration of ether, Hoffman's anodyne and acetate of ammonia. In spite of this, sometimes tracheotomy is necessary. In chronic urticaria, careful dieting, forbidding the use of wine and other alcoholic beverages, acid or fermentable, or indigestible foods of any kind. Bowels should be moved by gentle laxatives. The dyspepsia, or atomic condition of the stomach is best treated with the use of absorbing powders, antiseptic or alkaline, such as charcoal, chalk, sodium bicarbonate or magnesia. Renal insufficiency may exist or the uric acid diathesis. A definite vasomotor neurosis may be present. All of these call for definite treatment. The use of mineral waters properly selected is valuable.

Eye-strain as a Causative Factor in Sinusitis.—That eye-strain holds an important place in the production and maintenance of this conditon, is the statement made by W. L. Phillips (*Am. Med.*, September 17, 1904), although he does not claim that all forms of accessory sinusitis are due to it. The fact first to be ascertained in making a diagnosis of frontal sinusitis is at what early age do the frontal sinuses develop, for they are not present at birth. Observations vary on this point, but it may be accepted that the sinuses are present at the sixth year of life. Nationality must also be regarded, and investigation has shown that in the Germans the frontal sinus attained the greatest development, with the other nations following, the negro and the Chinese being at the end of the list. Patients who suffer from frontal sinusitis complain of frontal headaches, pressure above the eyes, inability to concentrate thought, dizziness, nausea, injected conjunctiva, defective vision, etc. The only positive way of making a diagnosis is to establish the presence of pus within the cavity. Care must be taken to exclude supra-orbital neuralgia, and where there is doubt between sinusitis and meningocele or aneurism of the ophthalmic artery, it is well to draw off some of the fluid for microscopical examination. In this connection it must be remembered that this particular form of sinusitis is limited to an inflammation of the lining membrane which varies from a slight congestion to a purulent condition. The nervous system bears an important part in the production of secretion. To produce clear vision with an astigmatic eye, all the residual nerve energy must be used up, because of the increased work required to focus an eye that has different meridianal lengths. This drain of nerve force robs other parts of the required energy to keep up a normal condition, and acts as would a division of the vasomotor nerves dilating the blood vessels and increasing the amount of mucus in the frontal sinus. If this secretion is allowed to accumulate from day to day, it will eventually become infected by germs entering the sinus from the nasal cavity. The writer is unable to state what percentage of sinusitis is due to eye-strain and what percentage may be cured by glasses, but in the cases in which he tried this method, he was usually successful. A series of ten cases is detailed, in which no special treatment was directed to the sinusitis, other than proper glasses. It is advised, however, that local treatment be also instituted in addition to the other.

The Medical News.

A WEEKLY JOURNAL

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PROGRESS IN PROSTATIC SURGERY.

The nature of the advance in the radical treatment of enlarged obstructing prostates is so important and withal so life and misery-saving that new and trustworthy methods cannot too rapidly be spread abroad.

The secret of the advance is to be found in the more thorough knowledge of the pathology of the organ. This has come, in the case of the prostate, with peculiar slowness. Although a correct view of the cause and nature of the morbid process was entertained and published by Sir Herbert Thompson over forty years ago, few surgeons took the trouble to verify his observations or to foster his teachings, with the result that, if we are to believe the views of some recent workers, a false presentation of the subject has, until very recently, been universally taught.

Few indeed are the practitioners who do not from early teaching conceive of the organ as having two lateral lobes, and, when obstructing, an offending central lobe. Even that almost inhumanly accurate tome, Gray's Anatomy, makes the statement that the prostatic portion of the urethra "passes through the gland." It does no such thing. True enough, this is what appears on first inspection to be the actual condition, but, as Thompson demonstrated, and as has recently been most conclusively proved, the two lateral lobes, each covered with an inner and an outer capsule, simply reach around and envelop the canal. How different is this from the boring-out process described by Gray.

Further, as to the so-called "middle lobe." It does not exist. It is quite true that in certain isolated and very rare instances there may be adenomatous tumors springing from the lateral lobes which, when single and favorably placed, may assume the proportion of a "lobe." The majority of "middle lobes," however, are simply the more or less symmetrically overdeveloped lateral expansions of the *two prostatic glands.*

If we are to believe the testimony of an acknowledged authority on these matters, it will, in the future, be necessary to entirely change our prostatic nomenclature. J. P. Freyer, in a recent exhaustive article (*Lancet* 1, 1904, p. 870), speaks as follows of the gross pathology of the hypertrophied organ: "The prostate is, in reality, composed of twin organs of apparently purely sexual function, which, in some of the lower animals, remain distinct and separate through life. So they exist in the human male during the first four months of fetal existence. After that period, in the human fetus, they approach each other and their inner aspects become agglutinated except along the course of the urethra, which they envelop in their embrace. These two glandular organs which constitute the lateral lobes of the prostate, though welded together to constitute, as it were, one mass, remain practically as distinct as the testes."

If, therefore, based on its gross morphological appearance, the gland or glands is to be spoken of as a single organ, this must be only with the distinct understanding that developmentally, and pathologically as well, the prostate is, in reality as double as the testes.

Suppose success to have at length crowned the efforts of those who are striving to undermine fallacious old prostatic teachings and to blot out hereditary genito-urinary superstitions, what result may be looked for?

We hope that that dread blight of old age, "catheter life," may cease to exist. Be it said that had Thompson's warnings, sounded over forty years ago, been heeded, many a man in the prime of intellectual and physical vigor would not have been dragged into an untimely grave

by this ghastly and forbidding specter. Surgery is to blame for this lapse in the care of old men. Had fewer ovaries been sacrificed and more prostates dug out, may not both men and women have been happier and longer lived?

If, as has been repeatedly stated, catheter life, or catheter death, as it should more aptly be called, can at the very outside average no longer than four years; if, as is held on the very highest authority, death is the penalty for using the catheter in one hundred per cent. of cases, is it not time for us all to wake from our lethargy and urge the perfection of the ideal operation for the diseased prostate?

THE UNVEILING OF PRENTICE.

While it may be true, as the French very epigrammatically state, that it is "the first step that tells," yet it is unquestionably the last one that gives a finished value to the whole and adds an increased worth to the collection, which, if incomplete, would be of but little profit to any one. *Finis coronat opus* and young Lochinvar would cut but a sorry figure in his immaculate evening clothes were he left destitute of the conventional white tie, while the most valuable of paintings would show to poor advantage without the accustomed frame. A freshly papered wall is lost without its border, and though it is the first brush which takes the mud from off our shoes, yet it is the last and final polish that renders them of use to us.

And this is as true of medicine and medical remedies as it is of an issue of postage stamps or a collection of coins. For while they may each and individually be possessed of a certain value, the total aggregate is largely increased from the fact that they represent a complete and finished series. Thus the owner of the celebrated proprietary remedy in the West who advertised that his medicine "cured chills and all other diseases, and was good to eat on bread," completed his cycle, as the specifics otherwise in use were not adapted for luncheon relishes, while the customary *hors d'oeuvres* of the bills of fare are not possessed of therapeutic virtues. The specimens of a single plate of Hogarth's "Rake's Progress" or Bartolozzi's "Four Seasons" are of infinitely less relative value than the completed sets, and this is a fact that should be as apparent to the physician as it is well known to the connoisseur.

The practice of medicine has been, and, it is to be feared, always will be, a thing of fads and fashions, not only in the treatment but in the etiology of disease, and practitioners of even a dozen years' experience can look back and remember how indiscriminately all the ills that flesh is heir to have been attributed to the same cause, and how each and every organ of the human body has been held under suspicion for producing trouble by reflex action without a clear verdict having been rendered against any one of them. Thus we had the epoch of "malaria," when every head or backache, every feeling of general malaise was at once attributed to it, and the patients without further examination were immediately saturated with quinine. This, with time and its healing influence as an adjunct generally sufficed, and the snap diagnosis was confirmed. The late Dr. Oliver Wendell Holmes was in the habit of saying that "Malaria was a large box and that there was a great deal in it," but we doubt if it ever could have held a thousandth part of what it was charged with, for malaria, as a rule, like Dr. Wiley's Scotch Whisky, is only produced in a pure state, in a quantity sufficient for home consumption. Its symptoms and effects are pathognomonic of the disease and are highly characteristic of it. It cannot, however, be claimed as a universal factor in the rundown condition that is liable to attack every one in the spring and fall.

This epoch of malaria was followed by the era of "Nervous Prostration," and every anemic American woman who had tried in vain to combine the pleasures of society with the duties of maternity was placed forthwith on her back in a "rest cure," and the overworked nervous man of business was patted on the shoulder with the pleasing assurance that there was "nothing organic," while the unprofessional ears of both were soothed with the generic shibboleth of *Neurasthenia*. Then came, from our national tendency toward specialism, a further splitting up of all the fruits of overtaxation and new remedies for their cure. We had "brain fag," "eye-strain" and the adaptation of spectacles for the relief of almost every pathological condition that had ever existed. Glasses for the neutralization of ills that had been inherited from the sins of our fathers, and which, without them, would be visited upon our children even unto the third or fourth generation. In fact, up to the present time, inebriety is practically the only serious condition that some enthusiast or other has omitted to ascribe to an ophthalmic origin.

Now, however, the collection is complete, and the missing link has been supplied. For the gap has been filled by one Dr. Chalmers Prentice, who is described in the report as "a prominent Chicago oculist," who has declared solemnly to the National Optician's Convention in Milwaukee, that "alcoholism can be cured by properly fitted eyeglasses." "He found," he states, "that inebriates generally suffer from certain deviations in the accommodation and convergence of the eyes, and he had noticed in many cases that glasses which remedied these derangements of sight had also the effect of diminishing the patient's appetite for liquor." Dr. Prentice also described a dipsomaniac being fitted with glasses and then losing all desire for drink after thirty days.

What other things Dr. Prentice has "noticed" he does not say, and it is greatly to be regretted that he has painted his picture with the broad brush of the impressionist rather than with the detail giving one of the miniaturist. For instance, he might have told us *what* the certain deviations of the convergence were that pointed so strongly toward the red light of inebriety, and explained why it was that when a person addicted to strong drink arrived at the age to lose his accommodation he did not lose his craving for liquor, too. He might also have given some further information concerning his quoted note, which was redeemed in thirty days after date, both in regard to his age and the amount of liquor that he had been in the habit of consuming.

Now drunkenness is a terrible evil, either in an individual or a community. It is a curse that has not only been the direct means of shattering many homes, and scattering peaceful firesides, but it is collaterally responsible for the formation of the W. C. T. U. (with the abandonment of the Army Canteen), the production of such lurid plays as "Ten Nights in a Bar-room" and the infliction on a sober and long-suffering public of the song of "Father, dear Father, come home with me now," so that any means available serving for its alleviation should meet with the fullest investigation. It may be in this particular case that headache had driven the sufferer to drink and that this being relieved by glasses, he returned to his normal condition, or possibly he was not a victim to a complete attack of mania a potu. He may have been simply "threatened" with it, as was the man at Oshkosh who lately testified on the stand, in regard to his responsibility, that he *almost* had delirium tremens, as evidenced by his seeing a blue owl on each of his bed posts.

But be this as it may, we cannot predicate a theory on a single case. One patient does not constitute a practice, nor does one swallow make a drunkard. So we must wait for further information from Dr. Prentice. Meanwhile, we cannot imagine that he will meet with much success in his educational efforts among the opticians. Missionaries have, ere this, been killed and eaten by their converts, and it is not always the engineer alone that has been hoisted by his own petard. The Pennsylvania legislature has declined to grant franchises to the Get-wise-quick Optical Institutes, and we confess that this delivery of lectures to them smacks overmuch of a recent advertisement in a woman's journal, "The whole science and practice of bridge whist in two, short, easy lessons."

Art is long, time is fleeting and, as these "expert refractionists" will discover sooner or later—

> Asthenopia is hypermetropia,
> Myopia is as bad—
> Insufficiency doth bother me,
> And refraction drives me mad.

ECHOES AND NEWS.

NEW YORK.

Subway Air.—According to analyses made by Dr. C. F. Chandler, the subway air of the city, so far as its oxygen content is concerned, is practically the same as the air of the street. What is wanted by the citizens, however, is not the sensational clap-trap of those who thought they found the air deficient in oxygen, nor the hasty contradiction by officially appointed representatives, but a careful, complete, and trustworthy study of the entire problem. We do not want 16 analyses, nor 36, but many hundreds taken at various times and sundry places.

Dr. Dew Wins Suit.—Henry E. Howland, as referee, has handed down his decision in an interesting suit brought by Dr. J. Harvie Dew, of New York, against the estate of Oliver W. Buckingham. The referee grants to Dr. Dew $10,000 for continuous medical services for five years and $10,000 for furnishing a home for the patient for three years.

Our City Parks.—Corlears Hook Park is located on New York's East Side just where the river makes a magnificent bend opposite the Brooklyn Navy Yard. With the exception of the Battery, it is by far the best site for a river front park on Manhattan, writes *Charities*. But a narrow strip of land between the park and the water is owned by private parties. And the exact angle of the bend has been held, so it has always been declared, by an estate which could not dispose of it to the city because the heirs were minors. During the Low administration, East Side social workers centered their efforts on the acquisition of the river front strip. The project was practically through the Board of Esti-

mate and Apportionment in December, when a technical flaw was discovered in the official advertisement, and the matter was laid over with assurances from the hold-over members of the board that the incoming administration would take it up. No steps have been taken. Meanwhile ground is being broken for a ten-story mill on the point-site which the officials had stated could not be purchased, and report has it that the water front may similarly be built upon, shutting in the park. There is only one possibility of forestalling the erection of the mill at the point. That would be an exchange of water front property a few blocks north now used as a city yard. It is a bad chance, but a chance. But there is no reason why any attempt to buy up and build up the river shore before the park cannot be forestalled by the city authorities. The incident shows, once more, the need for coordinated, intelligent action affecting the park situation in New York. Not only are the wrong sites likely to be purchased, but the right sites are being lost.

Politics and the Pneumonia Commission.—Even the *Pneumococcus*, deadly enough already, has worked its wires and gotten its "political pull" in fine working order. This time politics acts as an obstructionist. "The Civil Service Commission has ruled that the commission of medical experts appointed last year by the city authorities to investigate cases of acute respiratory diseases in the city with a view to lessening them, cannot employ assistants in other cities unless the physicians so employed first come to New York and undergo a municipal civil service examination."

Thus if the "Pneumonia Commission" desire to employ specialists in particular branches of the investigation of this most dread disease, be they Englishmen, Frenchmen, Eastern or Western, and New York should have the best; they must needs come to New York and pass an asinine civil service examination. The idiocy of this ruling is beyond comprehension.

State of New York—State Civil Service Commission.—Open competitive examinations will be held in various cities throughout the State, December 3, 1904, for the following positions: *Resident Physician*, State Industrial School, Rochester, $1,500 and maintenance. Candidates must be licensed medical practitioners of New York State and have had at least one year's experience on the staff of a public general hospital. Subjects of examination and relative weights: Materia medica and therapeutics, theory and practice, surgery, hygiene and sanitation, pathology and diagnosis, hospital management, 7; experience, education and special training, 3. *Fourth Grade Physician.* This examination is intended to provide eligibles for the position of Medical Interne and other medical positions of similar grade in the State hospitals and other State and county institutions. The usual salary is $600, with maintenance, including quarters, board, laundry, etc. It is open to men or women who have graduated within three years from a registered medical school. Candidates of the Homeopathic school will be admitted without regard to date of graduation. Candidates may be either non-residents or residents of New York State *and a license to practice is not required.* Subjects of examination and relative weights: Written examinations covering anatomy, physiology, chemistry, materia medica, therapeutics obstetrics, surgery, theory and practice, 8; education, experience and personal qualifications, 2. In order to be eligible for appointment, candidates must obtain a minimum standing of 60 per cent. on the written examination and 60 per cent. on education, etc., and a general average of 75 per cent. The medical service of the State comprises the 16 State hospitals, with about 160 salaried medical positions and about 30 positions in the Pathological Institute, the Craig Colony for Epileptics and other institutions. All higher medical positions, from assistant physicians at $1,200 to $1,500 and maintenance, to superintendents at $3,500 to $4,500 and maintenance, are filled by promotion through regular grades from that of sixth grade or junior physician. The State service presents one of the very best opportunities not only for training in psychiatry, but for general and special medical, surgical, laboratory and post-mortem work as well. Persons desiring to enter these examinations must execute applications on forms supplied by the Commission and file them in the office of the Commission before noon of November 28. Application blanks and further information regarding the character of the service and the nature of the examination for Fourth Grade Physician may be obtained by personal or written application to the Chief Examiner, State Civil Service Commission, Albany, N. Y.

In Memory of Dr. William Rice Pryor.—The faculty of the New York Polyclinic Medical School and Hospital, through its committee, appointed at the annual meeting, held November 10, 1904, *Hereby Resolves*, That the death of Dr. William Rice Pryor, Professor of Gynecology in the New York Polyclinic Medical School and Hospital, which occurred on August 25, 1904, was a great loss and sorrow to the Faculty of the Polyclinic and to his many friends. Graduated from Princeton College in 1878, from the College of Physicians and Surgeons in New York in 1881, and from Bellevue Hospital in 1882, Dr. Pryor was particularly well equipped for his life work and the eminent position he attained in the special branch of medicine to which he gave his attention was due in no small degree to this thorough preparation. His ability, perseverance, originality and thoroughness were recognized by all who knew him, and will always serve as a stimulus to his fellow workers. Throughout his entire career he was in the highest sense the friend of the needy and the afflicted. The amount of time he devoted to charity work was enormous, and in many instances, where those under treatment could not afford to pay for little delicacies needed, he supplied them from his own purse, besides giving his services free. His attention to details and his personal supervision and care of those he treated was most painstaking.

His services to the Polyclinic were most valuable. Appointed as Clinical Assistant to the Chair of Gynecology in 1886, he filled all the intermediate positions most creditably until in 1895 he was made full Professor of Gynecology. His clinics drew students from all over the country, and his writings attracted marked attention both at home and abroad. He was a frequent contributor to medical literature, and shortly before his death had completed a Text-Book of Gynecology. We assure his bereaved family of our deepest sympathy, and do hereby resolve that this record be inscribed at length upon the minutes of the Faculty, that it be published in the medical journals, and a copy, suitably engrossed, be sent to the family of our late colleague. W. R. Townsend, *Chairman;* J. Riddle Goffe, Brooks H. Wells, *Committee.*

PHILADELPHIA.

The Jefferson Medical College Library.—The report of the librarian of the Jefferson Medical College Library for the year just ended showed some interesting and noteworthy facts concerning the contents and circulation of the college library. There were 3,009 volumes in the library, of which

439 were added during the year; 203 by gift, and 236 by purchase and binding, the largest gift being 78 volumes from the library of the late Dr. C. W. Horner. There are fewer than two thousand volumes of general text books in the library, and from these there was a circulation of 10,663 volumes.

Large Award for Personal Injury.—One of the largest awards ever made in the Philadelphia courts for personal injuries was lately made in the case of Mrs. Cecilia McGrew. In 1902 a street car in which the patient was riding collided with a wagon and threw her to the floor. She has since been unable to walk. In her suit against the Philadelphia Rapid Transit Company she was awarded $17,501 damages.

Vaccination Law Defective.—Decision in the case of a physician accused by the Bureau of Health of issuing a false vaccination certificate has freed some hundreds of the same charge. The certificate was based on a vaccination of a child three years ago, the mother stating it had been successful; it appears not to have been. The magistrate censured the physician for carelessness in giving the certificate, but could not hold him for violation of the law, as no time limit is specified. The decision will probably result in an amendment to the act of Assembly relating to vaccination.

Chorio-Epithelioma.—An instructive case of this new growth was reported at the Philadelphia Pathological Society November 10, by Drs. D. L. Edsall and W. E. Robertson. The patient was a woman of twenty-five years, who complained only of gastric symptoms. She had been married four years, and had had no children or abortions. Fifteen weeks before admission she had a hemorrhage from the uterus. Repeated physical examinations revealed nothing abnormal. Autopsy showed the presence in both lungs of nodules varying from a pea to a hazelnut in size. Similar growths were found in the liver, intestines and the uterus. The latter were encapsulated and apparently had no relation to placental tissue.

CHICAGO.

Dr. Geo. F. Butler.—In announcing his retirement as medical superintendent of the Alma Springs Sanitarium, Alma, Mich., and return to his former home, Chicago. Dr. Butler desires to convey his assurance of personal interest in his former clients. His return to Chicago does not mean withdrawal from the practice of medicine. On the contrary, Dr. Butler will limit his business to medical work exclusively, and has arranged excellent facilities for the care and proper treatment of nervous and chronic invalids in the city and from out of town.

Appointment of Dr. Carlson.—Dr. Anton Julius Carlson has been appointed associate in physiology at the University of Chicago.

Unprofessional Conduct.—This was the label placed upon the division of fees, which is said to obtain among certain physicians in Chicago and Illinois towns by the passage of the following resolution offered at a recent meeting of the Council of the Chicago Medical Society: "Any member who is guilty of giving or receiving a commission or of entering into any arrangement for the division of a fee for professional services, which arrangement is not known and fully understood by the patient or party by whom such fee is paid, shall be guilty of unprofessional conduct." A similar resolution was introduced at a meeting of the Chicago Gynecological Society, held November 18, which contained a rider requiring all new members to assent to the change by signing the Constitution, but leaving it optional whether the older members shall do so or not. The resolution was warmly discussed, but will again come up before a subsequent meeting before its adoption or rejection.

Injunction Against Civil Service Examination in Cook County Hospital.—Physicians of the three schools of medicine, to the number of 350, petitioned Judge Dunne for an injunction restraining the county authorities from placing members of their profession at the Cook County Hospital under civil service, a project for which examinations were scheduled. The concerted action is the result of a combination of three separate movements against the plan. Representatives of the several medical colleges and of the three different schools of medicine met in conference and after canvassing the situation agreed to bring a joint suit. The result has been that the matter will be taken into court. The grounds on which the restraining writ was asked are the services of physicians to the hospital are gratuitous, and therefore do not come within the jurisdiction of the merit law which covers paid employees. A test would be unfair to men of national reputation who are on the attending staff, inasmuch as technical knowledge will receive high markings. Students fresh from their books are said to be better qualified to answer certain questions than physicians of long experience, whose knowledge has become practical rather than theoretical. The project would serve to perpetuate a constant staff and new men would find difficulty in getting into the service. The appointment of the examining board was unfair, as thirty-two of the forty-two examiners are Rush Medical College men. The County authorities have been enjoined from placing members of the medical profession under civil service rule. The court exprssed the opinion that the County Board had exceeded its authority in attempting to hold an examination for positions. A final order will be entered on the bill for injunction by Judge Tuley in a few days.

State Conference of Charities Suggests Improvements in Institutions.—At a meeting of the State Conference of Charities, held in Rockford, Ill., November 16, Dr. V. H. Podstata, of the Dunning institutions, made the report of the Committee on the Care of Epileptics, in which the establishment of a colony by the State is urged as of extreme necessity. Reports gathered by the State Board of Charities indicate that there are about three thousand epileptics in Illinois. He displayed plans for cottages designed by the State architect, showing that the two-story cottages could be erected at a cost of about $300 per inmate. He recommended single-story cottages in preference to the double story plan. As a beginning for the colony, it is proposed to ask the Legislature for an appropriation of an amount at least sufficient to purchase one thousand acres of land for the site. Most of the provisions asked for by the Conference look toward legislative action. A series of resolutions adopted recommend the custody of all feeble-minded women by the State; the transfer of all insane patients from the various County poor houses to the State institutions; the transfer of the Dunning Asylum of Cook County from the care of the county to the State; the establishment of an epileptic colony and an appropriation for that purpose from the State legislature; the passage of a bill compelling the disinfection of houses in which there has been death from consumption; more adequate appropriation for the State factory inspector's office, to enable a more rigid enforcement of the laws pertaining to space and light.

CANADA.

Inebriate Reform Society of Ontario.—Last week this society was organized in Toronto, the object of the new organization as set forth in the draft constitution submitted being to promote the adoption of the probation system for the reformation of inebriates; to promote the adoption of the "home" or dispensary treatment in suitable cases; to promote the establishment of municipal sanitoria for indigent inebriates; to seek the necessary permissive legislation as provided in the proposed bill now before the Ontario Legislature; to distribute inebriate reform literature, and to favor long sentences for confirmed habitual drunkards. The fee for the membership is placed at $2; life membership, $25; and funds will be obtained from Government grants, city and county grants, and from private sources. Now that this movement in Ontario is to be pushed along by a well-organized society, it will be expected that the Government will act, and act promptly in the matter. Among those who are mentioned as Hon. Vice-Presidents are Professor William Osler; Dr. W. B. Geikie, Dr. James Thorburn and Dr. R. W. Bruce Smith, of Toronto; Dr. A. M. Roseburgh, who has been identified for a number of years with this matter, has been made permanent secretary of the new organization.

Central Hospitals for Consumptives in Ontario.—A few years ago the legislature of the Province of Ontario passed an act providing that when counties or municipalities or groups of counties or municipalities desired to erect and maintain hospitals for their consumptive poor that the Government would furnish aid toward the erection and maintenance of these. What promises to be the initial step in this direction was taken last week when representatives of five leading counties in Ontario met in conference at Galt and agreed that it would be in the interests of their consumptives if a sanatorium were erected for the five counties of Brant, Oxford, Waterloo, Wellington and Perth, and will immediately lay the matter before the respective county councils of these municipalities. Dr. Radford, of Waterloo County, presided at this conference, and gave the statistics of consumption and its ravages in the Dominion. According to his lights there are about 40,000 consumptives in the Dominion, and about 15,000 in the Province of Ontario. The deaths average about 6,000 throughout the Dominion annually; in Ontario last year they numbered 2,694; in his own county of Waterloo they numbered 17. This movement is an important one, as no doubt other groups of counties will follow suit upon the action of the above named.

British Columbia Medical Examinations.—The examinations of the College of Physicians and Surgeons of Britsh Columbia were held lately in Victoria, the seat of government of the province. Thirteen candidates presented themselves, of whom nine received first-class honors, permitting them to practice their profession in British Columbia. One of these was a lady, Dr. Eliza Anderson, of New Westminster, who will practice her profession in that town. The Examining Board for the present year consists of the following: Dr. W. J. McGuigan, Mayor of Vancouver; Dr. J. C. Fagan, of Victoria, secretary of the provincial board of health of British Columbia; Dr. R. Eden Walker, of New Westminster; Dr. A. P. Proctor, of Kamloops, President of the British Columbia Medical Council; Dr. J. M. Lefevre, of Vancouver, who is at present on his way to England; Drs. O. M. Jones and J. C. Davis, of Victoria.

GENERAL.

National Association for the Study and Prevention of Tuberculosis.—At a meeting of the Board of The National Association for the Study and Prevention of Tuberculosis, held in New York, November 16, 1904, it was decided to hold the first annual meeting of the Association in Washington, D. C., on the third Tuesday of May, 1905; that arrangements be made for a two days' meeting, in which there should be one or two general sessions with distinguished speakers upon the broad topics of tuberculosis, and special meetings of the three following sections: (1) Sociological, (2) Pathological and Bacteriological, (3) Clinical and Climatological; and, that so far as possible, these sectional meetings should not conflict one with another, each section to be presided over by gentlemen distinguished in their respective work, and only papers of undoubted merit and interest be presented. The membership of the Association includes a large proportion of the most eminent workers in the subject of tuberculosis throughout the country, and it hopes to make its first annual meeting an important one in the crusade in this country against tuberculosis.

Epileptic Colony Fakirs.—A recent Chicago story of imposture in the name of charity, affords a text for charity givers and students of sociology. This is ably set forth by E. P. Bicknell, in a recent number of *Charities*. The lessons which may be drawn from this story are rather obvious, but it may be allowable to refer to two or three of them:

1. The pathetic demand for a cure for epilepsy and the totally inadequate response of medical science, drives victims of the disease to grasp at the promises of quacks and irresponsible promoters of so-called "homes" and "sanatoriums."

2. The universal respect for the garb of the nurse and of the sister of charity, makes those garbs a peculiarly effective aid for the collector who asks money in the name of charity.

3. The ease with which the common, unthinking impulse of charity may be exploited almost with impunity, offers a constant temptation to the unscrupulous.

Five or six years ago William Held established what he called the Illinois Home for Epileptics, in Chicago. It was a private institution and his advertised purpose was to treat epilepsy by methods which it was promised would cure the disease. Mr. Held at that time was not a physician, and his methods of treatment included little or no medicine. The home had two departments—pay and charity. To support the charity department, Mr. Held employed as a solicitor a woman named Rachel Gorman. Rachel Gorman was not and is not a graduated nurse, but she arrayed herself in a striking costume which suggested at once to all beholders that she belonged to some order or group of nurses. She collected money from the down-town business district, but frequented the saloons and race tracks, where it was said she received generous contributions. After two or three years Mr. Held discharged Rachel Gorman. The reasons he gives for the discharge are that the woman drank to excess; that her character is not such as is consistent with the work which she was employed to do, and finally that she did not make a satisfactory accounting of her collections.

The Illinois Home for Epileptics, after moving from place to place in Chicago, was transferred finally to Arlington Heights, a suburb, where about two years

ago the building was destroyed by fire. The home has not been re-established.

After leaving the employ of Mr. Held, who since the opening of his home had obtained a degree of doctor of medicine, Rachel Gorman persuaded S. F. Cleveland, and another man, known as "Doctor" Gibson, to join in the establishment of an enterprise which was given the title of the American Chronic and Epileptic Association. Headquarters were established at number 1015 North Clark Street. Mr. Cleveland was manager, Rachel Gorman occupied the "charity chair," and "Doctor" Gibson attended to the medical treatment. Affairs did not go well with the American Chronic and Epileptic Association. Rachel Gorman charged Mr. Cleveland with various shortcomings. Mr. Cleveland declared that Rachel Gorman did not "turn in" as much of her charity collections as agreeemnt called for, and that she was intemperate and associated with bad characters. The woman employed several assistant collectors, and garbed them all. Patients were not cared for at the home, but came there once a week for treatment. It was apparent that the number of such patients was exceedingly small. "Doctor" Gibson was said to administer a certain kind of drug or medicine alike to all comers. What this medicine was, did not appear. Mr. Cleveland complained bitterly that he had been deceived in "Doctor" Gibson, asserting that when he entered into the partnership he had understood that Gibson was a doctor of medicine. An open rupture among the officers of the home led to Rachel Gorman and "Doctor" Gibson leaving Mr. Cleveland and starting an organization of their own, known as the American Epileptic Charity Association, but later as the "Rachel Gorman Home for Epileptics." The Rachel Gorman Home was said to be located at Round Lake, Ill. Mr. Cleveland moved to 1065 North Clark Street where he opened a home for epileptics and called it the Cleveland "Neurotarium." Mr. Cleveland employed one Dr. W. S. Maharg, as physician to his institution. Dr. Maharg claimed to have an unfailing remedy for epilepsy; also for tuberculosis.

Rachel Gorman, with a corps of assistant solicitors in uniform, began an extensive campaign for funds. Cleveland's Neurotarium also put a corps of solicitors in the field garbed as nurses, the costume being different from that of the Gorman collectors. During a period of perhaps eighteen months Rachel Gorman sent seven patients to board in the farmhouse of a Mrs. White, of Round Lake, Ill. In June, 1904, Rachel Gorman purchased a house in Blue Island, and from that time the Rachel Gorman Home for Epileptics was advertised to be there. A city office of the home was maintained at 91 Wisconsin Street. The number of solicitors, in striking green garb, increased to eight or perhaps more. Certain of these women were unfavorably known to the police. Some of them, on being interviewed, stated that the average daily collections for each solicitor were about $6. It continued to be quite impossible to get any evidence that a larger amount of charity was being performed than was expressed by the care of one or two epileptics at the house in Blue Island. Dr. Maharg, physician to the Cleveland "Neurotarium," not satisfied with the income of that institution, opened a dispensary for the treatment of consumption at 954 North Clark Street. This enterprise he called The Nazarene Medical Mission. He employed a number of solicitors, put them in a garb suggesting the trained nurse, and set them to raising money. The neighbors noticed that these women would enter a house of the number given in the morning, would presently reappear in nurses' garb, and that in the evening they would return to the house, leaving the uniform and depart in street dress. The matter was brought to the attention of the police who raided the house in October and found it vacant, except for the belongings of the solicitors. Dr. Maharg was arrested and in the police court fined $100 and costs. Not being able to pay the fine he was sent to the House of Correction. This was the beginning of police activity so far as epileptic charities were concerned. Rachel Gorman's office on Wisconsin Street was next raided, and the uniforms of her collectors seized, together with papers and printed matter. Records showing their operations were captured in this way. These showed that Rachel Gorman and her corps of assistants were collecting a surprisingly large amount of money from the charitable people of Chicago. One slip, dated July 8, 1904, showed collections made amounting to $164. Governor Richard Yates and William Jennings Bryan were shown to have each given $100. The statement was made that Rachel Gorman had paid $3,000 upon the Blue Island property which she had purchased, and that she had a bank account of several hundred dollars on the date of the raid. She had sent her uniformed collectors to the State Republican and Democratic conventions at Springfield, and had other collectors operating in St. Louis. A deposit slip was discovered showing a bank account opened in a St. Louis bank with $358 as a beginning. A warrant was issued for Rachel Gorman's arrest, but she was found confined to her home in Blue Island as the result of an injury received, as she explained through falling on a defective sidewalk. She threatens to bring a suit for large damages against the city of Blue Island because of this injury. The Blue Island City Council has passed an ordinance prohibiting a home for epileptics within the city limits, and Rachel Gorman has been notified to move out. At present her threat to sue the city for damages seems to restrain the Blue Island authorities from proceeding actively against her. The police have warned the proprietor of Cleveland's "Neurotarium" that his collectors must be kept off the streets, under threats of arrest and the closing up of his institution. Other "charity" schemes have been recently checked, also, and evidence relating to the true character of two or three more has been submitted to the police authorities and is now under consideration.

International Surgical Society.—The first Congress of the International Society of Surgery will take place in Brussels, in September, 1905, under the presidency of Professor Th. Kocher, of Berne. The order of discussion will comprise: "Value of the Examination of the Blood in Surgery," to be discussed by Dr. W. W. Keen, of Philadelphia; Dr. Sonnenberg, of Berlin; Dr. Ortiz de la Torre, of Madrid, and Dr. Depage, of Brussels. "Treatment of Prostatic Hypertrophy," by Dr. Reginald Harrison, of London; Dr. Rovsing, of Copenhagen, and Dr. von Rydygier, of Lemberg. "Surgical Intervention in Non-cancerous Affections of the Stomach," by Dr. Mayo Robson, of London; Dr. von Eiselsberg, of Vienna; Dr. Mattoli, of Ascoli Piceno; Dr. Monprofit, of Angiers; Dr. Rotgans, of Amsterdam, and Dr. Jonnesco, of Bucharest. "Treatment of Joint-Tuberculosis," by Dr. Bier, of Bonn; Dr. Broca, of Paris, Dr. Bradford, of Boston; Dr. Codivilla, of Bologne, and Dr. Willems, of Gand. "Treatment of Peritonitis." This subject will be discussed by Dr. M. Lennander, of Upsala; Dr. Friedrich, of Leipzig; Dr. Lejars, of Paris, Dr. A. McCosh, of New York; Dr. Krogius, of Helsingfors, and Dr. de Isla, of Madrid. "Surgical Diagnosis of Diseases of the Kidney," will be discussed by Dr. M. Albarran, of

Paris; Dr. Kümmel, of Hamburg; Dr. Giordans, of Venice, and Dr. Lambotte, of Brussels. All communications should be addressed to Dr. Ch. Willems, 6 Place St. Michel, Gand, Brussels.

The Japanese Red Cross Society.—The London papers are printing an interview with Miss McCaul, who was received a few days ago by the Queen on her return from an important mission to the Far East, having for its object the study of the Japanese Red Cross Society. A detailed report of the Japanese military nursing system is now in the hands of her Majesty, and an account of the mission will shortly be published in book form.

There can be no doubt that the Japanese are ahead of Great Britain in the matter of surgical and medical outfit, and most certainly in the management of field hospitals. This is due to the tremendous forethought and wonderful inventiveness of the Japanese. Yet rigid economy is observed. There are many useful lessons to be learned from the Japanese. The equipment of the hospitals is magnificent, and the fact that their system goes like clockwork is due to the intense esprit de corps among all their medical men. Miss McCaul was thoroughly delighted with what she saw of the care of the wounded. The medical science and nursing skill of the Japanese are wonderful. No woman nurses are allowed at the front, all the work being done by men. During war the female nurses are drafted into the big reserve and stationary hospitals in Japan, where they replace the male nurses, who are dispatched to the front. They are all Red Cross nurses, and are kept as a reserve. After a course of training they sign for sixteen years' service, but are free to follow their ordinary avocations so long as they report at intervals, so as to be available when wanted.

Southern Surgical and Gynecological Association.—The seventeenth annual meeting will be held at the Hotel Hillman, Birmingham, Ala., December 13, 14 and 15, 1904. The following porgram has been arranged: Presidential Address, by Dr. Floyd W. McRae, of Atlanta, Ga.; Address of Presentation of Davis Monument, by Dr. C. M. Rosser, of Dallas, Texas; Address of Acceptance on Behalf of State of Alabama, by Gov. R. M. Cunnigham, M.D.; Address of Acceptance on Behalf of the City of Birmingham, by Hon. W. M. Drennan. Titles of Papers: Gall Stones in the Ampulla Vater, by Dr. A. H. Ferguson, of Chicago; A Method of Uniting Intestines of Very Small or Unequal Caliber, by Dr. J. Shelton Horsley, of Richmond, Va.; Enterostomy, by Dr. J. W. Long, of Greensboro, N. C.; The Treatment of Fecal Fistula, by Dr. Stuart McGuire, of Richmond, Va.; Intestinal Obstruction, by Dr. D. F. Talley, of Birmingham, Ala.; The Abuse of Purgatives Before and After Abdominal Section, by Dr. I. S. Stone, of Washington, D. C.; Observations upon the Aseptic Technic of Abdominal and Pelvic Surgery, by Dr. Henry T. Byford, of Chicago, Ill.; The Employment of Celluloid Plates for Covering Defects in the Skull, by Dr. W. Perrin Nicholson, of Atlanta, Ga.; On the Sterilization of Cutting Instruments, by Dr. H. A. Royster, of Raleigh, N. C.; When Shall We Resect in Tuberculous Disease of Joints? by Dr. C. E. Caldwell, of Cincinnati, Ohio; The Clinical Consideration of Tumors, by Dr. W. F. Westmoreland, of Atlanta, Ga.; Personal Experience in the Surgical Treatment of Cancer of the Cecum, by Dr. G. Wiley Broome, of St. Louis, Mo.; Cases in Which Early Diagnosis of Cancer of the Body of the Uterus was Made, by Dr. Rufus B. Hall, of Cincinnati, Ohio; Final Results in X-ray Treatment of Malignant Tumors, by Dr. William B. Coley, of New York; Fibroid Degeneration of the Uterus After Ablation of the Appendages, by Dr. J. Wesley Boveer, of Washington, D. C.; A Contribution to the Origin of Adeno-Myoma of the Uterus, by Dr. J. Whitridge Williams, of Baltimore, Md.; Alexander's Operation, by Dr. Charles P. Noble, of Philadelphia, Pa.; Effects of Suspensio Uteri on Subsequent Pregnancy and Labor, by Dr. Joseph Taber Johnson, of Washington, D. C.; Surgical Treatment of Goitres, by Dr. G. W. Crile, of Cleveland, Ohio; The Management of Acute Perforative Peritonitis, by Dr. J. Garland Sherrill, of Louisville, Ky.; Some Further Advances in Renal Surgery, by Dr. John B. Murphy, of Chicago; Report of a Case of Rupture of the Diaphragm, by Dr. George S. Brown, of Birmingham, Ala.; Typhoid Fever and Appendicitis, by Dr. J. C. Oliver, of Cincinnati, Ohio; Vaginal Cæsarean Section, Report of a Case, by Dr. C. Jeff Miller, of New Orleans, La.; An Unusual Case of Cæsarean Section: Double Vagina, Double Uterus; Pregnancy in One Uterus, Fibroid Preventing Delivery in the Other, by Dr. Geo. Ben Johnson, of Richmond, Va.; Obliteration of Stomach by Caustic, by Dr. S. J. Mixter, of Boston, Mass.; (1) Vesical Diverticula; Report of Four Cases Requiring Operation. (2) The ultimate Results Obtained by Conservative Perineal Prostatectomy in Seventy-five Cases, by Dr. Hugh H. Young, of Baltimore, Md.; A Typical Case of Tuberculous Peritonitis, by Dr. W. P. Manton, of Detroit, Mich.; Pelvic Floor Repairs During the Menopause, by Dr. Joseph Price, of Philadelphia, Pa.; Pelvic Inflammation: A Discussion of Some Moot Questions Relating Thereto, by Dr. L. H. Dunning, of Indianapolis, Ind.; Hematoma of the Ovary, by Dr. Magnus A. Tate, of Cincinnati, Ohio; Tracheotomy for Gunshot Wound of the Trachea, by J. McFadden Gaston, of Atlanta, Ga.; Stypticin in Uterine Bleeding, by Dr. H. J. Boldt, of New York; (1) Encephalo-Meningocele. (2) An Easy Method of Instituting Peritoneal Gauze through the cul-de-sac, by Dr. W. D. Haggard, of Nashville, Tenn.; Title Not Announced (Drainage), by Dr. C. H. Mayo, of Rochester, Minn.; Title Not Announced, by Dr. M. H. Richardson, of Boston, Mass.

The Late Dr. Henry Tuck.—At a stated meeting of the Medical Association of the Greater City of New York, held November 14, a report from the committee appointed to prepare a suitable minute in regard to the death of Dr. Henry Tuck, one of the charter members of the association, was received and adopted. The first part of the report was devoted to a biographical sketch of Dr. Tuck, and the concluding portion was as follows: "Although Dr. Tuck took a very active part in the management of the Life Insurance Company, he always retained his interest in medicine and in the friendships he had formed with members of his profession. He was greatly interested in the Society for the Relief of Widows and Orphans of medical men, and for many years acted as its treasurer; only giving up this position last winter, when failing health compelled him to do so. Those who were intimately connected with Dr. Tuck, both in his business and in his professional life, will always remember him as an unusually competent, faithful and successful man in whatever he undertook. (Signed) John P. Munn, *Chairman;* Richard H. Derby and W. Gill Wylie, *Committee.*

Yellow Fever in Cuba.—Yellow fever has appeared again in Cuba. Four cases have recently been reported through the Marine Hospital Service of the United States. Two of these have been in Punta de Sol, across the bay from Santiago de Cuba, and two in Havana. These have been the first known cases of the disease on the island since it was stamped out by the medical and military authorities of the United States

during the American occupation of the island. The scourge of "yellow jack" has been unknown since early in 1900. Accompanying the reports of the scattered cases at Punta de Sol and Havana come the most disquieting news of a departure of the Cuban government from its plan of following American lines strictly in all the cities regarding sanitation. The streets are no longer cleaned. Safeguards are being dropped. Petty politics has resulted in an almost complete abandonment of the wise course pursued by the Americans, which was followed by the government of President Palma for more than a year after he began his rule.

It is said in official circles in Washington that the Cubans are paving the way for an epidemic of yellow fever, which will subject the entire southern seacoast of the United States to danger, and which may result in the adoption of unusual measures by this country under the Platt amendment. There is a possibility of the adoption of quarantine embargoes against all Cuban seaports, unless quick and radical measures are taken by the government of President Palma to stamp out the disease. Thus far the cases that have been reported from Cuba are believed to have come from Mexico on cattle steamers, with the exception of one, which contracted the disease from one of the Mexican cases.

Boston Societies.—The Boston Medical Library and the Suffolk Branch of the Massachusetts Medical Society have in conjunction arranged a series of meetings for the coming winter, at which papers will be read and a discussion held on certain subjects of general interest, medically and surgically. The first of these meetings was held November 16, at the Medical Library, and the subject of nephritis was there considered.

Dr. W. T. Councilman, of the department of pathology of the Harvard Medical School, first spoke on "Some General Considerations of the Pathology of the Kidney," going over in a brief and concise way; the pathological finding, in the conditions known as acute degenerative, acute glomerular, subacute glomerular, chronic diffuse and chronic intestinal nephritis. He dwelt on the slow development of the kidney, its very large blood supply and its high capillary tension and the part normally played by glomeruli and tubules in eliminating fluids and solids. The various methods of infection, the selective process in regard to certain cells used by various infections, and their results in the kidney as well as changes due to arteriosclerosis and old age were carefully gone over.

Dr. R. C. Cabot then gave a résumé of an investigation, which, for a number of years past, he had been following up on the subject "limitations of our knowledge of renal disease as shown by examination of the urine." In comparing the autopsy reports of renal disease found microscopically after death with the clinical diagnoses vast discrepancies were discovered. For instance, in 21 cases, pathologically found to be acute glomerular nephritis, only five cases were diagnosed as nephritis at all; in 10 subacute cases five were unrecognized, others being spoken of as fever urines; in the more chronic forms there was a better record but here those cases diagnosed had edema, ascites, etc., as aids in distinguishing them. Fifteen out of 17 chronic glomerular cases were correct and two-thirds of the cases of chronic interstitial and arterio sclerosis were born out by the pathologist. On the other hand, cases were found where the urine showed large amounts of albumin and casts of all kinds, while at post mortem the kidneys were quite normal. Dr. Cabot went on to speak of the very slight value of urea estimation as done clinically, and the decrease of our knowledge of urinary examination and of nephritis.

Dr. Edward G. Wood, of the Harvard Medical School, then read a paper on urinary examination, going carefully into the characteristics of urines as regards twenty-four hour amounts, albumin and sediment in the classes of nephritis, spoken of by Dr. Councilman, borne out by his experience.

In the discussion which followed Dr. T. Bergen Ogden took a stand against Dr. Cabot's views, reporting 30 cases in which urinary examination and pathological findings had quite agreed.

OBITUARY.

Dr. Duncan Campbell MacCallum, who for over thirty years was an active teacher in the medical faculty of McGill University, died last week in Montreal at the advanced age of eighty-one years. In 1850 he was graduated M.D. from McGill, and proceeded to England where he spent some time in London, Edinburgh and Dublin, obtaining the degree of M.R.C.S. Returning to Montreal a year later he was appointed a demonstrator of anatomy in McGill, and in 1856 was appointed to the chair of clinical surgery, which he held up to 1860 when he became professor of clinical medicine and professor of medical jurisprudence. In April, 1868, he was appointed professor of Obstetrics and of Diseases of Women and Children, a position he held up to 1883, when he resigned from active teaching. The late Dr. MacCallum was first elected visiting physician to the Montreal General Hospital in 1856.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, November 5.

THE KING AND HIS TAME SURGEON—THE RELATION OF HOSPITALS TO MEDICAL SCHOOLS—LONDON LUNATICS—THE BOWMAN LECTURE.

The exploits of the Russian Fleet in the North Sea have given opportunities for advertisement of which certain pastmasters in the art have not been slow to avail themselves. All the wounded fishermen, with a single exception, are under treatment in the Royal Infirmary at Hull, where they were landed. One man, however, was brought all the way to the metropolis that he might be cared for in the London Hospital. There was not the slightest necessity for this, as far as the patient himself is concerned, but the authorities of the hospital were determined to utilize the occasion. The Chairman of the Committee, Mr. Sydney Holland, a great grandson of Sir Henry Holland, a famous society physician of the earlier part of the last century, has the ear of the Queen, whom he uses as a decoy duck—*pour le bon motif*, of course, as it is all for the greater glory of his hospital. He induced her to send a message to Hull to the effect that a bed was ready in the London Hospital for the reception of a patient. Touched by this manifestation of royal thoughtfulness, the good folk of Hull sent up a poor fellow suffering from a severe compound comminuted fracture of the humerus, together with a wound of the back of the neck, in which fragments of shell were imbedded. As a natural result of the delay and the exhaustion caused by a long railway journey, the man was in a septic condition when he was admitted. But what is that to the honor of being under the direct patronage of the Queen and of being visited by Sir Frederick Treves at the special request of the King, who has deigned to express his

interest in the case? This condescension on the part of his most gracious majesty has touched the hearts of his loyal subjects, and their feelings will doubtless find expression in contributions to the hospital which is fortunate enough to contain a patient honored by the notice of the sovereign. Treves is supposed to have retired from practice some time ago, but according to the papers he still sees patients. Readers of *Martin Chuzzlewit* will remember Mr. Montague Tigg's famous conundrum, "When is a man in jail like a man out of jail?" to which that gentleman said no one has found the answer. If the word "practice" be substituted for "jail" I venture to think that an answer has been found by Sir Frederick Treves. A short time ago he was visiting a society lady who had hurt her leg; now he signs bulletins about the Prime Minister, who is said to have a small clot in a superficial vein in his leg. The truth would seem to be that Treves is kept hanging about the King, who sends him to look after people in whom he happens to be specially interested, whether it be a former Egeria, a victim of Russian "Captains Courageous," or a Minister of State. To a man of ordinary self-respect the position appears scarcely dignified; but men in this country will stoop to pick a new title or even a fresh decoration out of the gutter. When peers of the realm do not disdain to play the part of flunkeys at Court and high-born maidens strive for the privilege of acting as lady's maids, it is perhaps not surprising that doctors, whom Society looks upon as a lower order of creation, should be content to be treated by the monarch as servants. Some members of our noble profession have, it is well known, been proud to play the part of Sir Pandarus of Troy for royal personages. For centuries the surgeons to the Kings of France rejoiced in the title of valet. Edward VII. is keeping up the tradition of kingship by having at hand a tame surgeon, by means of whom he can display the vicarious benevolence which is a cheap way of earning popularity.

For years past, Mr. Stephen Coleridge, the leader of one corps of the antivivisection army, has brought charges against the London hospitals of diverting money subscribed by the public for the relief of the sick poor to the maintenance of the medical schools attached to many of them. He alleges that large sums are contributed out of the hospital funds to be used for purposes of medical education. He contends that "the money sent by subscribers to hospitals direct and to King Edward's Hospital Fund, is not given in order to afford medical students an education, partly defrayed by the charitable, nor is it given to enlarge the emoluments of lecturers in schools, nor is it given to buy animals for vivisection and instruments and apparatus with which to dissect them alive." Mr. Coleridge knows perfectly well that animals are not dissected alive, but he has made these reckless statements so often that it is likely enough he now believes them. George IV. used after dinner to relate with thrilling detail how he headed a cavalry charge at the Battle of Waterloo. He told the story so often that he at last came to believe it, and on one occasion even appealed for confirmation to the Duke of Wellington, who answered with admirable tact, "I have heard your Majesty say so." King George's laurels were won in far different fields, and Mr. Coleridge is, I believe, like Werther, a moral man, but there is evidently a strong psychological resemblance between them. In regard to the charge of diversion of funds, it is true that some of the hospitals make annual payments to the schools, but it has been shown over and over again that these payments are for value received in the form of services rendered to the hospitals by the medical staff, who are, for the most part, teachers in the schools, and by the students who do much of the actual ministration to the sick. It would doubtless be well for other reasons if the hospital schools were merged in the University of London, which has no organic connection with any hospital. This, besides other greater advantages, would have the effect of knocking the bottom out of a foolish and dishonest agitation. In the meantime the whole question of the financial relations between the hospitals and the schools is to be carefully investigated by a committee consisting of Lord Welby, a great financial authority; Lord Edward Fry, an ex-Lord Justice, and Archbishop of Stepney. The Committee is to consider and report: "(1) Whether any, and if any, how much, money given or subscribed for the relief of the sick poor to the twelve London hospitals having medical schools, is contributed, directly or indirectly, by those hospitals, or any of them, for the maintenance of medical education. (2) Whether any direct or indirect return for such contributions (if any) is received by the hospitals from their medical schools, and, if so, whether such return is equivalent to the amount of the contributions. (3) Whether, in the event of the committee finding that any hospital contributes to its medical school a sum in excess of the return it receives from the medical school, there are any special considerations advanced in justification of such expenditure, or any general considerations which would apply to all hospitals having medical schools." It is to be hoped that the result of the inquiry will be to suppress abuses, if any are found to exist, and effectually to stop the mouth of calumny.

The London County Council has control of all the public lunatic asylums, and of all pauper lunatics in licensed houses, workhouses, etc., in the County of Middlesex. There are eight asylums and one Epileptic Colony within the area of its jurisdiction. The number of lunatics under its charge was, according to its annual report, which has recently been issued, on January 1, of the present year, 17,592 (7,555 males and 10,037 females); this is an increase of 327 (236 males and 91 females) as compared with the foregoing year. In addition to these there were 6,356 patients (3,068 males and 3,288 females) in the imbecile asylums of the Metropolitan Asylums Board, making the total number of lunatics of all classes (exclusive of private patients and those chargeable to the Prison Commissioners), 23,948, as against 22,952 on January 1, 1903. The total increase of 996 lunatics is the largest annual increase the Council has ever had to record. The number of cases admitted to the London County Asylums during the year ended December 31, 1903, was 4,502, the number of patients discharged recovered was 1,352, being a trifle over 30 per cent. on the total admissions, a little over eight per cent. on the average number resident, and nearly 6½ per cent. on the total number under treatment. The number of deaths was 1,485, a percentage of 7.05 on the total number resident as compared with 7.65 in 1902. The County Council is very proud of its asylums, and as far as size and appearance are concerned it has reason to be so. An American physi-

cian who visited Claybury Asylum not long ago asked, when he saw the ballroom, if it was not Buckingham Palace he was being shown. A vast amount of money has been wasted in palatial buildings with accommodation for two or three thousand patients; but although these huge establishments impress the unthinking public, they make the judicious grieve. As places of treatment for brain-sick people they show results greatly inferior to those of small asylums; as places of scientific observation they are simply failures. The medical staff is utterly insufficient even if the Superintendent and his assistants could give their whole time to their patients; but if a house physician in a general hospital finds it all he can do to record his observations of fifty patients, what kind of clinical study can be expected of a man who has charge of five hundred? In addition to this a heavy burden of clerical duty is put on the shoulders of the unfortunate medical officer, and this he must do lest a worse thing befall him. The result is what might be anticipated. The medical work is scamped in a manner that makes the records useless and misleading, even when they are not purely imaginative, while the value of the figures may be estimated in accordance with the degrees of comparison "Lies, d—d lies, statistics." Of the quality of the clinical records some idea may be formed from the fact that medical officers often keep no notes at all, but hurriedly fill in their books more or less at random when a visit of the Commissioners in Lunacy is impending. A man in such an emergency has been known in his haste to take the post-mortem register instead of the admission book and describe patients as "in fair general health," who were not only dead but anatomized. Compared with this such statements as "No history or sign of syphilis" in a case where the traces of the disease were writ large all over the body, or "No evidence of tuberculosis" in another where there was a cavity in the lung into which a man could put his fist, are trifling errors. And it is to be feared that our lunacy statistics are, to a large extent, made up of such material. Under the present system medical officers are selected more for their social and athletic accomplishments than for their scientific knowledge. Comparatively few of the assistants have any prospect of rising to the post of Superintendent; hence in a professional sense they soon run to seed. If a man of any capacity does stray into the service he soon finds that ardor in the pursuit of knowledge or keenness in the discharge of his medical duties is too likely to bring him into conflict with his official chief or his Committee, perhaps with both. Original work is not encouraged, and the most enthusiastic student after a time loses heart and sinks into a groove of routine. Hence little use is made for the furtherance of knowledge of the abundant material in the asylums. Things are no more satisfactory from the patient's point of view. The indiscriminate herding together of cases of all kinds and degrees of insanity in vast crowds minimizes the chance of recovery in curable cases. For years the establishment of hospitals for the insane staffed by men equal in professional standing to the physicians and surgeons of general hospitals has been urged on the Council. This would make it possible to treat a number of cases in the early stage without marking them with the social stigma of declared lunacy. It would also give opportunities for the scientific study of insanity, such as do not at present exist in this country. The London County Council is entitled to the credit of having made provision for scientific research in the well-equipped laboratory at Claybury, where excellent work is done by Dr. F. W. Mott. But the advantages of the laboratory are in great measure nullified by its distance from London. If it were transferred to London, it would doubtless become a center of neuropathological research. There is a powerful party in the Council, however, which is jealous of scientific progress, and so far they have successfully resisted this proposal. But, if disposed to be obstructive in regard to research, the Council seems to be inclined to a forward movement in the direction of treatment. Some time ago a "hospital villa" in connection with the Bexley Health Asylum was opened for the reception of female patients. There they are kept till a diagnosis has been made. Cases in which there appears to be no chance of recovery are then transferred to the main building. Those of a more hopeful character are kept in the villa till convalescence is established, when they are transferred to a convalescent villa and eventually discharged. The plan has worked successfully, few of the new cases needing to be admitted to the main building at all. So far it has been tried only in the case of female patients, but the results have been so encouraging that a "hospital villa," for men is about to be built. On the whole, though our method of dealing with lunatics stands urgently in need of reform, signs are not wanting that a better day is about to dawn.

On November 3 Dr. Mott delivered the Bowman Lecture before the Ophthalmological Society. The audience was unprecedentedly large, though it is to be feared that most of them followed the distinguished lecturer non *passibus æquis*. His discourse was, as Mark Twain said of the story of Jonah and the whale, "interesting but tough." In addition to the members of the society there were histological and psychological experts, but the histologists were perplexed by the psychology, while the psychologists found themselves at sea in the boundless deep of histological details over which Dr. Mott sailed serenely. The lecture embodied the results of original work on the Evolution of the Visual Cortex in Mammals. It was pointed out that there was a correlation of structure and function which was exhibited by progressive complexity of cell lamination of the visual cortex in mammals from Insectivora to Primates. The more, said Dr. Mott, the animal depends on vision as a directive faculty in its preservation, the more complex is the structure. The transition of uniocular panoramic to perfect binocular stereoscopic vision shows successive stages in the number of direct fibers until in the primates there is semi-decussation and, as far as his observations go, this may be correlated with a progressive development in the layer of higher associational pyramidal cells lying above the layer of granules. The progressive evolution of vision as a directive faculty is simultaneous with a motor adaptation, especially related to the mode of feeding and defence, rather than to a particular species. Carnivorous animals, especially cats, therefore have their eyes set forward, abundant direct fibers, and good binocular vision to enable them to seize their rapidly moving prey with their teeth or paw. Better motor adaptation, as Sherrington has independently suggested from his flicker observations, is probably the essential cause of the direct path of the optic fibers and binocular vision. It is, however, in the primates

that we have semi-decussation of the optic fibers, a muscular lutea, eye-movements in all directions independent of head movements, associated head, eye and hand movements and perfect binocular stereoscopic vision, associated with the hand, which, in the apes, becomes the principal executive agent in the procuring of food, defence and flight. Visual images are now always associated with impressions of the exploring hand and the ideas of form, substance, extension and qualities of objects are the complex of the visual and tactile kinesthetic images and capable of endles variations. This we may connect with an occipital lobe, a line of Gennari visible to the naked eye, a deep layer of pyramids with a double layer of granules in the visuo-sensory striate area. Even more important than this is the appearance of a definite associational zone, in which there is a much greater depth of pyramidal cells, the third layer of which is characterized by very large pyramids serving as higher complex association neurons between the visual cortex and the auditory and tactile motor areas. As we rise in the scale of primates this associational zone increases with the more perfect specialization of the forelimbs for manipulation and the erect posture and this we may correlate with the increase in area of the associational or visuo-psychic zone and the pushing back and infolding of the striate visuosensory cortex so that in man it comes to occupy the infolded calcarine region of the mesial surface, although some types still preserve the anthropoidal character. It is possible that the same causes may give rise to the shifting forward of the anterior motor eye centers. Dr. Mott added that the extensive observations, as yet unpublished, of his assistant, Dr. Watson, on the visual cortex, showed that the pyramidal layer was concerned with higher associative memory and educability. Concerning this view the lecturer endeavored to show that a most important factor in educability is a storage capacity in associative memory of the combinations of stereoscopic visual images with varied complex and refined tactile motor experiences which arriving at its fullest perfection in the primates, progressively develops in successive stages from the ape to man, coincidently with the specialization of the hand and the erect posture, until by reciprocal interaction of the directive and executive faculties the hand becomes the instrument of the mind; and that this progressive evolution may be correlated with anatomical changes in the convolutional pattern of the brain and increase in numbers and complexity of the pyramidal system of higher association neurones.

SOCIETY PROCEEDINGS.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held October 26, 1901.

The President, Dr. Roland G. Curtin, in the Chair.

Case of Typhoid Fever Complicated by Appendicitis.—Dr. Moses Behrend read this paper. The patient contracted typhoid fever of a rather severe type; in the third week of the disease he developed symptoms of perforation which at operation were found to be those of appendicitis. He recovered for an operation of the latter; ten days afterwards he was tapped for pleurisy with effusion. About fourteen days after this he developed pneumothorax. The patient made a fine recovery.

Dr. L. J. Hammond, in the discussion, thought that the case illustrated the fact now generally admitted that appendicitis occurring in the course of typhoid fever is entirely coincident, and in no way connected with the typhoid process; and that the majority of cases of appendicitis occurring in the course of the typhoid fever are recurrent attacks. Given a case of typhoid fever with the early symptoms of pain, rigidity and other symptoms of appendicitis one should suspect the presence of a large amount of adhesions; and, if the symptoms are severe, the surgeon is justified in operating at once. The removal of the appendix, breaking up of adhesions and liberation of the coil of intestines will lessen the possibility of typhoid perforation.

Dr. W. H. Teller thought that, notwithstanding the fact that the mucous coat presented all the symptoms of typical catarrhal appendicitis, the condition was that of perforative typhoid with involvement of the peritoneal covering of the appendix by extension and not a case of pure appendicitis.

Dr. J. Allison Scott thought it should be remembered that there are several varieties of inflammation of the appendix in typhoid fever. Reviewing the literature of the perforation of the bowel, and collecting statistics of the hospitals of London and suburbs and of the Pennsylvania Hospital he has found 382 cases of perforation, 17 of which were in the appendix alone and due to ulceration from within. There is another type in which during the course of the typhoid fever, or during the convalescence, acute inflammations of the appendix have been set up but not due to ulceration within the appendix, but from the appendix becoming gangrenous and perforating in the ordinary form of appendicitis. Dr. Scott is inclined to believe that if cases of perforation of the bowel are studied carefully it will be found that the appendix is involved more frequently than is thought.

Dr. Astley P. C. Ashhurst believed that there were several varieties of appendiceal inflammations during typhoid fever. That they could be distinguished by the different symptoms he did not think was possible. In the early stages of typhoid fever there could be seen constant pain, vomiting and a certain amount of shock with rigidity over the appendix. At operation there would be found infiltration of the appendix and an appendicitis, the probability being that these were only typhoid lesions in the appendix. Later on there might be present the same conditions through perforation of ordinary inflammation of the appendix. The inflammation, he believed, would so obscure the typhoid lesions that to distinguish one from the other was hardly possible.

Dr. Behrend, in closing, took exception to Dr. Teller's remark that the case was one of preperforative typhoid fever. He believed it to be one of pure appendicitis; due, he granted, to the extension of the inflammation as a result of typhoid. He considered it a case of pure typhoid fever and not such as Dr. Teller stated As interesting facts connected with the case, Dr. Behrend stated that of five nurses connected with the case, one contracted typhoid fever, another appendicitis and died from peritonitis. The patient's wife contracted typhoid fever and recovered. The nurse who contracted typhoid fever also recovered.

The Trend of Modern Prescription Writing.—Dr. M. Clayton Thrush considered this subject both from the standpoint of the physician and the pharmacist. One thousand prescriptions were examined and criticized from the standpoint of incompatibility, whether chemical, therapeutical or pharmaceutical. The number of ingredients used were classified in groups. The

number in which the metric system was employed was also considered and finally the prescriptions were classified acording to the manner of writing, terminations and phraseology being included. These various headings were elaborated upon and improvements suggested. The prescriptions containing only official preparations were classified, also those in which proprietary preparations were used.

The Relation of the Physician to the Bureau of Health.—Dr. S. W. Newmayer said that in the word cooperation were gathered all the duties of the physician to the Bureau of Health. There should be no need of legally calling some physicians to account for failure to report cases of contagion in order to set an example to other physicians. He made a plea for more accurate and earlier diagnosis by the use of laboratory methods, and for a postgraduate course in the clinical diagnosis of the more common communicable diseases. The Bureau of Health, he believed, should have under its supervision a series of lectures and demonstrations by competent teachers, which physicians should be invited to attend. It should be compulsory for all medical students to attend lectures on contagious diseases and to see cases in the city hospital. There should be given to each graduating class one or more lectures on the duties of a physician to the Bureau of Health, explaining what diseases to report and the best means to protect the public. To lessen the mortality from tuberculosis there should be a practical and concerted plan of education, as well as a report of cases of tuberculosis. Every physician should spare a little of his time in imparting the principles of domestic hygiene to those to whom he is called in his daily work. The consideration of simple lessons on contagious diseases should be borne in mind by physicians having the revision of school text-books. To lessen the infant mortality, largely caused by impure milk and improper food, the physician, trained nurse and even the public should be taught a few practical and simple tests for impurities in milk.

Dr. Edward Martin, Director of Public Health, said that the desire of the Bureau of Health was to help the medical profession, to act as its agent, and not as a foreign intervention, that the Bureau asked the help of the profession and was ready to give in return its assistance. He referred to the corps of young men insructed in the work, every man of which has been a hospital resident, had had a special course in contagious diseases, and in other directions been fitted for the work. Dr. Martin said: "You cannot teach all men tact and judgment; you can make many men wise, but you cannot make all men sensible." The underlying spirit of every man in the corps, however, he said, was to help, and to stand by the profession, and not to interfere. With the help of the profession the whole city work would be a success.

Dr. I. Valentine Levi said that the fact that the Board of Health should carry out the disinfection, unless the physician obtain special permission to do so, had been the source of much trouble between the medical inspector and the doctor. The family physician would tell the family to burn some sulphur and that the Board of Health would not need to do anything, and when the medical inspector would appear and insist that the house be disinfected, he would get all kinds of beautiful appellations. In one instance the medical inspector was reported to the central office as doing everything possible against the medical profession. He felt that the physician should tell the patients that the house must be disinfected by the Board of Health, unless he orders otherwise.

Dr. S. Solis Cohen regarded as important the question of what was to be done with patients suspected of having diphtheria, until a culture was made. He believed it the duty of the physician, whether in his office or in the dispensary, to disinfect the throat promptly when there is any question in diagnosis.

Concerning the action of the Board of Health and its inspectors, his own experience has been that there need be no trouble, if both sides were willing to act, as human beings who recognize their own liabilities to mistake, ought to be willing to act. Occasionally an officious or tactless inspector had done or said something in the household of a patient to which he felt he could take reasonable objection; but, he had always found the communication with the superiors of this tactless or officious inspector had been the means of having him so instructed that he would not repeat the error elsewhere. That, he believed to be one of the factors in the relation between the physician and the Board of Health that each physician would well cultivate, being prompt and unsparing in the direct report to the chiefs of the Bureau of Health of any dereliction, or seeming offence, on the part of their inspectors. Sometimes it would be found that the physicians had been misinformed by the patients. He felt that the Bureau of Health was deserving of all the support and advice that could be given by the medical profession.

Dr. Jay F. Schamberg agreed with Dr. Cohen that there were many instances in which both patients and physicians were misrepresented. He knew that the average ability of the members of the board of medical inspectors in the detection of contagious diseases was of a very creditable standard, and bound to increase. He believed that the medical profession had full confidence in the Bureau of Health, and that the subject should be approached with a little more charity on both sides.

CHICAGO ACADEMY OF MEDICINE.

Regular Meeting, October 14, 1904.

The President, Wm. H. Wilder, M.D., in the Chair.

Chorea Insaniens.—Dr. Daniel R. Brower stated that the insanity of chorea, particularly the insanity of Sydenham's chorea, was a very infrequent condition. In Huntingdon's chorea there was progressive mental deterioration eventually leading to dementia. The most important form the practitioner had to contend with was Sydenham's chorea. In his cases for the last dozen years there was about one case of chorea insaniens in every two hundred. In two-thirds of the cases of Sydenham's chorea mental disturbance occured. Chorea was a brain disease, and mental peculiarity was conspicuous. As a rule, the mental state was one of confusion. Accompanying the confused mental condition there were maniacal and depressing states. A very large proportion of the cases he had seen belonged to the maniacal type. The depressive confusional form of insanity, which was the outgrowth of chorea, was much less common. The last case he saw was a young woman of twenty-three years, in whom the maniacal manifestation was very pronounced. She had had chorea since she suffered from a fright two months previously. When he saw her the case was a well-marked one of the maniacal type of acute confusional insanity. Sometimes there was a stuporous state; but usually it was the maniacal confusional type, or the depressing confusional type. Many years ago he witnessed a post-mortem on a case of chorea insaniens of the Sydenham type in a girl,

nineteen years of age, in whom there were found most striking pathological conditions. Among them were minute multiple emboli in the striate arteries. The patient had an endocarditis. Whenever he had the opportunity of getting hold of a case in the beginning, he insisted upon rest for the first week or ten days, no matter how mild the case. The child should have as near absolute rest as possible. It should be put to bed, given all the playthings possible and separated to the utmost extent from the family generally. Rest and isolation were the foundation stones upon which any treatment of chorea should be built to prevent the development of more serious mental symptoms. The best single remedy for chorea was arsenic. Fowler's solution was the best preparation in the majority of cases. When the arsenates did not agree with the child, it should be given sodii arsenitis. Arsenical preparations must be pushed in order to bring about curative results in chorea. Arsenic should be given until the approach of toxic symptoms, as curative effects were just a little short of toxic effects. The next best remedy was cimicifuga. Frequently he combined the two, the fluid extract of cimicifuga, giving it in gradually increasing doses, until he got to its physiological effect, and in this way it gave satisfactory results when arsenic alone failed. He had found cimicifuga beneficial in the Sydenham chorea of girls about he menstrual period. Furthermore, one should not forget the diet, as these children were below par in nutrition. They should be given digestible, easily assimilable foods in the greatest possible abundance. He would put a child to bed for a week, sometimes two weeks, and then gradually relax the rest cure. He would have these patients go to bed early and have breakfast in bed. During the remainder of the day they should go outdoors and play. This would be about the second week, and if he found no letting up in the choreic movements under this treatment, he would try static electricity. There was no question as to the sedative effects of positive insulation on the insulated stool of a well-working static machine. The prognosis of chorea insaniens was not bad. Some patients would go on to permanent insanity, and some would die; but the latter proportion would be small.

Dr. Frank X. Walls reported the case of a woman, about eight months pregnant, who, in 1891, developed chorea in its gravest form. She was admitted to the Cook County Hospital, and after a few days there, on every treatment he could think of to relieve her, she died. A post-mortem examination was made, and endocarditis and some congestion in the brain were found. Chorea was merely a manifestation of a condition that might exist in a variety of pathological processes. It was the manifestation of a neural malnutrition, an intoxication or infection, and showing itself in bizarre, and incoordinate muscular movements. There was usually a mental picture in a patient suffering from this malnutrition and intoxication that showed itself in neural and mental phases. These cases varied clinically from the mildest to the severest types. Many of them were relegated to an insane asylum as incurable. In a large number of cases there seemed to be a close association between those of chorea and some infection. In cases of chorea evidence of infection, such as elevation of temperature, and the localization of distinctive inflammatory conditions in certain organs, as the endocardium primarily, the joints sometimes, and may be the brain, often existed. It was a remarkable thing, yet nevertheless true, that in no other condition did one find as complicating endocarditis in cases of acute rheumatism as in chorea. More endocarditis accompanied this clinical picture than in any other diseases. Of a series of cases recently investigated in the Leipsic Hospital, there were over 79 cases of chorea that showed endocarditis clinically. This agreed with the experience of Osler. In a large number of cases that attended Osler's clinic, evidences of endocarditis were found years after the chorea had been recovered from. Not alone did chorea occur with acute articular rheumatism, but it often followed influenzal rheumatism, tonsillitis, and particularly a type of which he had seen a number of cases since his attention was called to it, severe gastrointestinal disturbances, especially such as suggest appendicitis. The tonsils were the seat of entrance of infection into the body, and rheumatism was not an infrequent condition following tonsillitis. A little girl presented herself a year ago, with an attack of severe nervousness, very much like the chorciform movements, with pain and gastrointestinal symptoms, vomiting and joint complications. After one week of illness the pain in her abdomen became so severe that she was forced to go to bed, although previous to that she was walking about. The child was in bed a week, during which the abdomen was very much swollen. She vomited offensive matter that seemed fecal. During all this time there was dynamic obstruction of the bowel. He saw the child a year after, and she had a marked endocarditis. Her elbows and knees were partially anchylosed, but the mental symptoms had cleared up almost entirely. This child probably had had appendicitis. A physician at the time made such a diagnosis, with rupture, peritonitis, and systemic infection, which produced multiple joint complications. Probably this irritation in the brain had resulted in chorea.

In any given case of chorea, the etiological factor or factors should be considered, and each case should be treated individually. He would not subscribe to the administration of any remedy, unless there was a distinct individual indication for its administration. Treatment should be individual.

Dr. Henry T. Byford, when he was engaged in general practice, had a great deal to do with children. He treated a number of cases and looked upon them from a more simple standpoint than was done now. His treatment then was iron, laxatives, and if the case was more or less acute he gave a few doses of chloral from time to time, together with rest treatment. He guarded against the giving of food that was liable to disturb the bowel and digestion, and regulated the diet of these patients. In these cases a great deal of trouble came from the alimentary canal which was largely reflex. Supposing there was heart trouble or disease of the serous membrane due to toxins, what produced the toxins? Supposing it came from the alimentary canal by way of the abdominal tonsil, so-called, when that occurred there was usually intestinal disorder, which irritated and rendered abnormal the latty tissues about the appendix, a more central absorption of poisons was liable at the same time to produce reflex symptoms. He thought chloral did much good, although he would not continue its use until it produced any debilitating effect. Iron did good in fortifying resistance against irritation in the alimentary canal. Convulsions arose from irri-

tation of the alimentary canal in children. In gouty individuals contractures of limbs could be relieved by laxatives given quite a while.

Dr. William F. Waugh mentioned the case of a young man who, soon after starting in school, developed choreic symptoms. He was quite positive that the young man's eyes were troubling him, and therefore sent him to a very capable ophthalmologist, who examined the eyes carefully and reported that there was nothing the matter with them. So sure was the speaker that the patient's eyes were affected from peristent use in school, that he sent him to another ophthalmologist, who found the eyes affected, fitted them with glasses, shortly after which the choreic symptoms subsided. Since that time, when the choreic symptoms reappeared, he had charged the young man with neglect to wear his glasses, and found it had always been the case. Here the trouble with accommodation was undoubtedly the cause of chorea. He mentioned the case of a child who was about to be sent to an institution as an instance of total moral depravity, but a rhinologist fortunately removed the adenoids which the child had, and the patient developed a sweet disposition. He emphasized the importance of paying attention to elimination and to the regularity of the exertions.

Dr. James G. Kiernan said that chorea insaniens was a term applied by the Germans to a type of chorea in which there were manifestations of the acute confusional type of insanity, very frequently without emotional basis. This, as a rule, was an expression of a systemic state of exhaustion, that produced the chorea, rather than a condition secondary to chorea. That chorea might produce insanity there was no doubt. Mental agitation of the patient would prove a sufficient breakdown for inhibitions to a motor direction, and in the same way breakdown in a psycho-motor direction. Of the cases cited by Osler, two were striking as indicating, not as Osler claimed, the deep-seated, distinct nosological character of chorea, but that this systemic adynamia might produce chorea and a changed mental state. One was a marked systemic disturbance; the other was the secondary stage of syphilis. The mental conditions of the secondary stage of syphilis, as the speaker pointed out nearly one-quarter of a century ago, and which had since been corrborated by Regis and others were essentially acute confusional states. There was a state closely allied to the acute confusional conditions, so far as the mental symptoms were concerned: so-called Bell's disease, typhomania of some authors, the delirium acutum of the Germans, and delirium grave of Spitzka. In the acute confusional states, except where secondary to conditions allied to rheumatism, etc., lesions might be absent. There were no pathological findings, microscopic or macroscopic. In delirium acutum, or delirium grave, there was well-marked, clearly distinguishable meningoencephalitis, with equally decided and destructive microscopic changes. He did not believe with Meyer that delirium grave or confusional insanity was an expression, strictly speaking, of this state, hut that this state was an extension consequent on the circulatory disturbances of what might have been an acute confusional state. He was much impressed with this in the many necropsies made at a time when Dr. E. C. Spitzka and he were collecting somatic material in cases of insanity. He was struck with the absence of actual lesions in certain cases which did not pass beyond the acute confusional state as contrasted with the demonstrable presence of lesions in this state. This was twenty years ago. When the germ theory of disease began to dominate medical thought, he was strongly of the opinion that in all probability typhomania or delirium grave was a germ condition. Tests by Koch's law in Italy, Scandinavian countries, Germany and the United States had signally failed to demonstrate any germ factor. Furthermore, the condition may come on as one of the so-called meningitides. It would come on after school strain and a number of conditions of that kind. It might also come on from the perturbations which occur in railway accidents and similar conditions. Of that class he had seen two cases, which died in the Cook County Insane Hospital. In that instance, as in a similar one, that threatened to be the subject of litigation, the early diagnosis was chorea. Mental symptoms grew deeper and deeper, then there followed an extremely marked, semi-stuporous delirium, in which the control of the sphincters was lost. There was rise of temperature, and then death. Autopsy showed very marked and decided evidences of delirium grave. In a similar case in Chicago there had been an accident on the Northwestern "L" road, in consequence of a collision. The girl was removed to her home in what appeared to be a condition of chorea. A diagnosis of chorea was made by the attending physician. Changes went on the case passing from chorea simplex to a confusional mental state, which grew deeper and deeper until she finally died. An autopsy was made by the coroner, who made the pathological diagnosis of acute cerebral meningitis, which was all he was entitled to make from the findings. Fatal termination had not been suspected. The question was raised whether this condition was due to the accident or some outside cause. There was a question raised which had arisen in this State ever since the Braun *vs.* Craven case was brought up, in which it was decided that simple fright is not sufficient. The question of physical impact was brought up and argued. The qu stion was incidentally raised by the railroad company as to whether the trouble was not due to secondary infection. The only element in the girl's history which bore on secondary infection was the existence of a gum-boil that had been treated by the family practitioner, from which she had made a recovery without showing the slightest effect. The question of physical impact was discussed a good deal. In consequence the case was never taken up in the courts because the amount offered by the railroad company would have been all that could have been realized by litigation under the old law as regards responsibility for death. In this case there was very little doubt left from the evidence as to the direct determining influence of traumatism. It seemed to him a constitutional factor, rather than a local one, played a large part in many of these cases. He was strongly opposed to the treatment of cases of chorea insaniens in insane hospitals. The insane hospital had its value, but the vast majority of cases of confusional mental states could recover excellently under general hospital treatment. They should be removed from their accustomed environment. A large number of cases were benefited by arsenic, and arsenic should be physiologically pushed. As nearly all these states depended upon weakness, or disordered inhibitions, they were benefited by those agents that

acted as sedatives rather than stimulants. Furthermore, strychnine in small doses was frequently an excellent sedative. It gave a certain amount of rest that was not attained by other agents.

Dr. William L. Baum had, at the present time, a child suffering from whooping-cough that had developed choreic symptoms. He looked upon the disease as a symptom-complex, which might be due to a large number of different causes, as syphilis, toxemia, rheumatism, etc. Regarding the use of arsenic and pushing it to the constitutional limit, every year there occurred increasingly large number of cases of arsenical neuritis. There were also cases of paralysis following administration of arsenic. A few days ago he saw a case of paralysis of the facial nerve occurring in an individual to whom arsenic had been given for a period of years, and carried up to the constitutional limit. Some time ago the patient complained during the administration of arsenic of extreme pains occurring in the region of the Gasserian ganglion. All of the symptoms were found which are present in the ordinary arsenical neuritis. There was considerable pressure in this region, and complete motor paralysis developed on one side of the face from which recovery was extremely slow.

Dr. C. S. N. Hallberg asked if Dr. Brower had had any experience with the hypodermic administration of sodium arsenate solution. Dr. Moyer had used it quite extensively for several years, and spoke strongly in favor not only of its hypodermic use of it, but likewise of the sodium arsenate as against the arsenite, the form of arsenic represented in Fowler's solution. Evidently there was much less danger of untoward effects from the arsenate of sodium than there was from the arsenite. He also asked whether there was any difference in value of the preparations from the green cimicifuga or dried. This question had come up different times in the revision of the pharmacopœia. Some therapeutists argued that cimicifuga should not be admitted to the pharmacopœia, because only preparations of the green or fresh root were of value. That would be inadmissible in the pharmacopœia, and it would not be proper to admit a dry drug, or preparations of it.

Mr. V. G. Gallagher (of the Chicago Bar) stated many phases of the subject that could be discussed. As to the right to recover damages for chorea and kindred affections, he had this to say: The question as to whether injuries resulting from fright and terror would form a recoverable basis in an action at law had been the subject of much discussion in courts of law not only in Illinois, but in all States. As a rule, as gathered from the conclusions arrived at by various authorities, there was one class of cases in which damages could not be placed on recovery. The first class was where the injury was brought about purely by fright and terror, but physical impact was entirely absent. In those cases, while there was a general rule of law in reference to actions predicated upon negligence, there was no liability except for such consequences as were usually ordinarily likely to emanate from the act complained of, and in determining whether the consequences were usual and ordinary, the individual would be treated as a general individual, and not as a special one. That is to say, the party claiming redress would be considered by the law as a healthy individual from the time the alleged cause of action arose, and not as a sickly one, so that if the acts complained of, which were alleged to produce injuries, were not such as would produce injuries of the character complained of, in an ordinary healthy individual, whatever that might be, there could be no recovery for the injury regardless of how severe it might be.

Before taking up the other class, one of the principal cases to rely on for a ruling was the one Dr. Kiernan had just cited (Braun *vs.* Craven). That was a case where the defendant (a minister) called at the house of the plaintiff's sister, the sister being a tenant of Craven's, and finding the door open he walked through the house to her room, where the patient was sitting on the floor assisting her sister in packing preparatory to moving, and suddenly asked what she was doing, following that interrogation with many gesticulations, and statements to the effect that he would not allow them to move, and would have a constable there in a few minutes, and he was going to have his rent, etc. She alleged that his conduct on that occasion, when she first turned around and saw him standing up, greatly frightened her, particularly his subsequent gesticulations, with the result that she became afflicted with St. Vitus' dance and some other nervous ailments. The trial resulted in a verdict in her favor for $9,000. This was reversed by the Appellate Court, then carried to the Supreme Court, where the Appellate Court was sustained. There were two reasons assigned which he did not think were sound philosophical legal reasons, namely, as a basis of conserving the interests of public policy, damages should not be recoverable in cases in which injuries were claimed to result slowly from fright and terror. Furthermore, dangerous use might be made of such a ruling if injuries were permitted to be made a basis of action where there was no means of measuring the damages.

The second class was one in which the question was whether there was physical impact preceding the nervous conditions. In such cases it had been held, regardless of how slight the impact might be, if nervous troubles followed, that is, including distress and anguish of mind, or excluding everything else, and including only distress and anguish of mind, that compensation might be allowed. The other class is where the intention of the wrongdoer was to inflict mental anguish and distress. The principal cases included in that class would be those of seduction. Where seduction was cause for right of action, which was not he rule in Illinois, except on the theory of loss of service, the parent, guardian or employer in some instances might maintain action against the seducer for the loss of service and slander, etc. In this latter class of cases the recovery was not limited to the actual damage sustained, but purely exemplary damages may be awarded. The intent of the wrongdoer, if possible, must be established, so that the punishment meted out will be commensurate with the injuries. The peculiarity presented by the different rulings consisted in this: In the first instance, while the Supreme Court decision in the Braun versus Craven case might be said to be well taken upon the ruling first rendered by it, namely, the conditions under which this woman was frightened, were not such as would frighten an ordinary healthy individual, and the results claimed to exist were not such as would follow ordinarily, yet, as to the other decision or ruling, that it is against public policy, yet as to the other decision or ruling, that it is against public policy to allow damages which cannot be measured, if re-

covery of damages is allowed for this element in cases where there is an infinitesimal physical impact, so that the major portion of the injury sustained is a nervous one, mental anguish, etc., it is just as easy in such cases to exaggerate and elaborate upon that basis as it would be in cases where the physical impact was entirely absent.

As to the other proposition, he said there was no methodical rule by which damages could be measured in every action brought for personal injuries. The rule of law in all such cases as to how much shall be awarded was left to the sound judgment and discretion of the jury, and their verdict was not interfered with, except where it was manifest they had abused their discretionary power. His advice to physicians was that where they had a patient who was suffering severe mental anguish and other nervous disturbances, or even fright, it would be well for them to devote some of their time to discover some little physical impact, even though it consisted of not more than a concussion caused by an explosion or something of that kind. A German and his wife heard a noise in the basement of their house, and went down there to see if they could discover what it was. The wife lit a match, which was followed by an explosion. There was no physical impact in that case other than that caused by the concussion. This case was taken away from the jury in the trial court on the strength of the decision rendered in the case of Braun *vs.* Craven. The trial court seemed to think that simple fright was shown by the fact that physical impact was absent. The Appellate Court reversed that decision, largely upon the strength of Dr. Kiernan's testimony, who was quoted extensively in the opinion which was rendered.

Dr. Brower, in closing, said that no one recognized the untoward effects of arsenic more than he did. He was glad Dr. Baum called attention to the fact that these effects were due to the long-continued use of arsenic. He did not think any physician was justified in administering doses of arsenic such as he had referred to in any case for long periods of time. If results were not speedily obtained, the remedy should be withdrawn, so that the general principles applying to the treatment which he had enunciated did not contemplate the long-continued use of arsenic in large doses. As to the hypodermic use of arsenic in chorea, he remembered very well Dr. Moyer's paper, but for some reason or other his patients would not submit to the hypodermic use of arsenic. He could not get them to take more than one or two doses. The patients were nervous childdren; they did not like to be hurt, he did not know of any way of giving a hypodermic injection of arsenic without inflicting some pain, unless it be done by cataphoresis, and even then there would be more or less pain. He was free to confess that he had never obtained the results from the hypodermic use of arsenic others had. He did not know whether it was the green or the dry preparation he was using. That cimicifuga had effects upon the ordinary individual and upon certain sick people he was as sure as about any drug. The fluid extract was the preparation he had used.

Why the Quack?—Dr. William F. Waugh read a paper on this subject, which was designed as an inquiry as to how far the medical profession itself was responsible for the resort of the public to irregular and non-professional methods of treatment. He affirmed that quackery had always existed, the tendency to it being innate; but recently the tendency to it seemed greater than ever, so that it seemed the public welcomes any and every avenue of escape from the regulars. Among the possible causes originating in the profession he enumerated the loss of the element of mystery that attracted the superstitious; the desire for novelty; the powerful trend toward operative surgery, which most men dreaded; therapeutic nihilism and pessimism; but more than all else, the loss of confidence in the disinterestedness of the physician's advice. As men suspected that the physician was managing his cases for his own pecuniary benefit rather than for the best interest of the patient, they grew reluctant to entrust themselves to his hands. This phase of commercialism had become the subject of innumerable alleged jokes, and these had a powerful influence in moulding public opinion. The remedy lay in upholding the dignity of the medical profession, in cultivating the highest professional and moral standard, in discouraging this form of humor, and in winning and holding public confidence by deserving it.

BOOK REVIEWS.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., of Berlin, Prof. P. von Bruns, M.D., of Tübingen, and Prof. J. von Mikulicz, M.D., of Breslau. Volume V. Translated and edited by William T. Bull, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York, and Edward M. Foote, M.D., Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York. Surgery of the Pelvis and Genito-Urinary Organs. Lea Brothers & Company, New York and Philadelphia.

With the appearance of the fifth volume this sumptuous work stands completed and may be judged as a whole. A careful consideration of the finished system compels even greater admiration than did the examination of its constituent parts, as they appeared one by one. That so huge an undertaking could be brought to a successful termination with a comparatively small number of months, bears evidence to the untiring industry which all of those concerned must have thrown into their labors, while the careful workmanship visible on every page, is a proof that as much thought as energy was applied to the production of this work.

The present volume covers the important subject of pelvic surgery, including the genito-urinary organs, but not the domain of the gynecologist. The first section is by Steinthal and is devoted to the surgery of the bony pelvis and its arteries. The succeeding chapters on the anus and rectum are anonymous, but the topics in question are treated with admirable thoroughness, and a well-executed colored plate illustrates the normal and diseased mucous membrane of the lower bowel as seen through the proctoscope. The affections of the kidney and ureter are discussed by Schede, in what is the largest subdivision of the volume. Its completeness may be judged of since it covers almost 250 pages. Especial stress is laid on diagnostic measures and the technic of and instruments for, cystoscopy, catheterization of the ureters and segregation of the urine are described and illustrated in most satisfactory fashion. Even the subject of cryoscopy is elaborated, both from the theoretical and practical standpoint. Diseases of the bladder and prostate have been allotted to Nitze and Sonnenburg, and here further information is given regarding cystoscopic methods, together with some

beautifully reproduced photographs taken through this instrument. Körte and Rammstedt are responsible for the section on diseases of the urethra (exclusive of venereal diseases), while the authorship of the succeeding subdivision on the penis is not given. The closing chapters of the book are in the scrotum, testicle, seminal vesicles and vas deferens, and Bramman has written an instructive and practical essay on this branch of genito-urinary surgery.

A word should be said regarding the index, which may make or mar the utility of so extensive a system as this. In the present instance the general index, placed at the end of Vol. V, appears to be above reproach, and should make information contained in any of the volumes readily accessible. The illustrations in this volume are, if anything, superior in execution and interest to those in the preceding books. The plates taken from Taylor's treatise on genito-urinary diseases, are especially beautiful.

It is a pleasure to see an enterprise of such magnitude brought to so happy an issue, and we foresee for the system the popularity and recognition it so richly deserves.

How to Cook for the Sick. By Helena V. Sachse. Second Edition. J. B. Lippincott Co., Philadelphia.

Every physician who has seen his best plans for a patient's recovery brought to naught by improper or poorly cooked food; every nurse who has been at her wits' end to tempt an indifferent appetite or to satisfy safely a capricious one; every invalid who has wearied of the limitations of a diet governed by the terse generalizations of his physician and the anxious but ignorant efforts of his family, all these—and their name is legion—will find welcome assistance in "How to Cook for the Sick." To the physician and trained nurse it will be chiefly valuable in putting into concrete and available form the dietary principles with which they are familiar, but to the uninitiated it will prove positively illuminating.

"What may she eat, Doctor?" asks the home nurse, and the doctor usually mentions a few articles of food of which the patient soon wearies, or else takes refuge in the generalization, such as, "Anything except starchy foods," which leaves the average household as much in the dark as ever. Armed with this book, however, the doctor may indicate at once an appetizing and varied diet, or, on other hand, the amateur nurse may, by its aid, interpret the doctor's general directions in terms of a practical process. The recipes are so simple and carefully expressed that mistakes and uncertainties are eliminated; and the always indispensable index is in this case further developed into a system of classified lists which enables one to turn promptly to the recipe needed, whether "liquid food," "food rich in fat," "invalid's breakfast" or a combination of all three requirements be sought.

All the dishes described sound very attractive, and the healthy reader might be pardoned for a glimmering desire to be in a position to test a few of them.

Simon's Physiological Chemistry. By Charles E. Simon, M.D., late Resident Physician, Johns Hopkins Hospital; author of Simon's Clinical Diagnosis, etc. New (2d) edition. Lea Brothers & Company, New York and Philadelphia.

Year by year the foundations of medicine are being sunk deeper and deeper into the strata of chemical fundamentals, and interpretations of perverted physiological functions are made possible by reason of the acquisition of such substructures in our knowledge.

The importance of the study of physiological chemistry cannot be overstated and it is a pleasure to call attention to this work because it is so well adapted to the giving of just the type of information that can be applied in the problems of medicine.

The author has made his work second to none, and we can recommend it in the highest terms.

Health and Disease in Relation to Marriage and the Married State. Edited by Prof. D. H. Senator and Dr. med. S. Kaminer. Translated by Dr. J. Dulberg. Vol. I. The Rebman Company, New York and London.

This is a most extensive work. Dealing as it does with one of the oldest of social institutions it naturally lays claim to the attention of all.

The diseases incident to the state are here very thoroughly dealt with and the work cannot but help be a mine of useful information.

In this first volume eleven chapters are included. The Hygiene of Marriage, by Prof. M. Gruber, of Munich; Inherited and Congenital Diseases, by Prof. J. Orth, of Berlin; Consanguinity and Marriage, by Prof. F. Kraus, of Berlin; Influence of Climate, Race and Nationality on Marriage, by Dr. W. Havelburg, of Berlin; Sexual Hygiene, by Prof. P. Fürbringer, of Berlin; Menstruation, Pregnancy, Child Bed and Lactation, by Dr. Kossmann, of Berlin; Constitutional Diseases, by Prof. H. Senator, of Berlin; Diseases of the Blood, by Prof. H. Rosin, of Berlin; Diseases of the Vascular System, by Prof. E. v. Leyden and Dr. W. Wolf, of Berlin; Diseases of the Respiratory Organs, by Dr. S. Kaminer, of Berlin; Diseases of the Digestive Organs, by Prof. E. A. Ewald, of Berlin, and Renal Diseases, by Dr. P. F. Richter, of Berlin.

In this ambitious program the authors have frequently strayed from the strict interpretation of their subject, but apart from this padding, as it were, the work is one to be commended.

A Text-Book of Pathology. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College of Philadelphia; Pathologist to the Medico-Chirurgical Hospital, Philadelphia. W. B. Saunders & Co., Philadelphia, New York and London.

This is truly an excellent text-book, particularly for students and practitioners of some years' standing, who have grown somewhat rusty, can benefit greatly from this recent presentation of the subject.

The work is a large one; it is no book for play-time—it is solid meat and over 800 pages of it. We can commend the setting. The illustrations are numerous and are exceptionally good. The entire book is attractive. The text is modern and we commend it to our readers as a useful reference book.

Kirke's Handbook of Physiology. Revised by Frederick C. Busch, B.S., M.D., Professor of Physiology, Medical Department, University of Buffalo. Fifth American Revision. William Wood & Company, New York.

Kirke's handbook has for a number of years held its place in our medical schools because of the rare ability of the author to compress within a reasonable size the many essential facts of physiology and yet not outrage the theories, nor lose to the student the general perspective.

In a manner thoroughly in line with the original thought of the author, Dr. Busch has shown himself able to do the same thing, and we are glad to welcome the fifth edition, and predict for it a speedy successor in the shape of a new sixth edition.

THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

SECOND NOTE RELATIVE TO THE MORE EFFICIENT UTILIZATION OF THE SPARK-GAP RADIATIONS.

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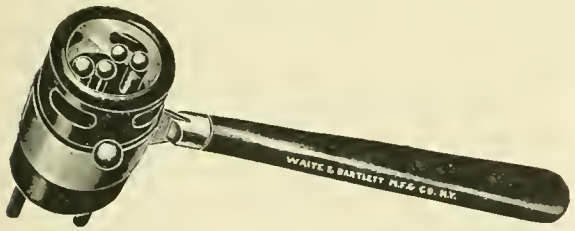
I.

IN the June number of the *Journal of Cutaneous Diseases* I published a "Preliminary Note" on the above topic in which I stated that I had discovered some new "rays" given out by my "ultra-violet" condenser spark-gap lamp. (Fig. 1.)

This lamp is furnished in front with a thin quartz plate which is transparent to ultra-violet rays, while glass is opaque to them. If the face of the lamp with the quartz *in situ* be applied to a piece of photographic paper (Solio) and the

Fig. 1.



The author's ultra-violet ray lamp.

lamp actuated by a suitable coil, a strong impression will be made on the paper in about thirty seconds. If the experiment be repeated with the *quartz removed*, the result is substantially the same.

Ultra-violet rays, as is well known, will discharge an electroscope if charged *negatively* but *not* if charged *positively*.

On trial I found that the lamp with the quartz in front discharged the *negative* electroscope in about twenty seconds, but with the quartz *removed* discharged it instantly; that is within less than one second. I found further that the radiations from the unobstructed spark would discharge an electroscope charged *positively*.

It was clear from this that in addition to the ultra-violet rays we were dealing with another class of radiations that only slightly affected the photographic plate, but acted very energetically on the electroscope.

In default of any means of determining the exact nature of these radiations I assumed that they were negative electrons, and predicted that they would act very energetically on the skin or any other tissue with which they came in contact; and that the character of the reaction would resemble that from X-rays and radium, except that it would make its appearance more promptly. This is the substance of the "preliminary note."

II.

If the radiations in question were negative electrons, as are the cathode rays of the Crookes' tube, and the *beta* rays of radium, they would of course be deflected by a strong magnetic field, but efforts in this direction by Dr. Pegram in the Physical Laboratory of Columbia University, by Dr. Milton Franklin at his own laboratory and by myself, failed to give evidence of any deflection.

E. Wiedemann, in the *Zeitschrift für Elektrochemie*, July 20, 1895, described a new form of radiation to which he gave the name of *Entladungsstrahlen*, and stated that it was not deflectible by the magnet and would not pass through flour-spar which readily transmits the ultra-violet rays. He does not appear to have examined the radiations with the electroscope. It is quite possible therefore that Wiedemann's observations related to the "rays" to which I have here called attention.

Excluding ultra-violet rays and negative electrons, it is, of course, possible that they are positive electrons, such as constitute the Goldstein rays, *i.e.*, the anode rays of the Crookes' tube, and the *alpha* rays of radium; neither of which have heretofore been utilizable for therapeutic purposes. There is another hypothesis, however, that seems to me more probable; namely that they are ions.[1] Ions may be generated in a variety of ways and are always developed at the site of an electric spark. Coincidently there is developed an area of high pressure that drives the ions at a high velocity into the surrounding air.

In discussing this question Prof. J. J. Thomson says,[2] that if we have a spark one centimeter long in connection with a condenser of 1,000 cm. capacity the pressure developed will be equal to that of 660 atmospheres (equal to about five tons to the square inch). This pressure, however, diminishes with the distance from the spark according to the law of inverse squares.

When we consider the enormous velocity with which the ions are projected in consequence of the pressure behind them, and the rapidity with which they are developed, it is quite within reason to assume that they will be capable of exerting a considerable influence on tissues that are

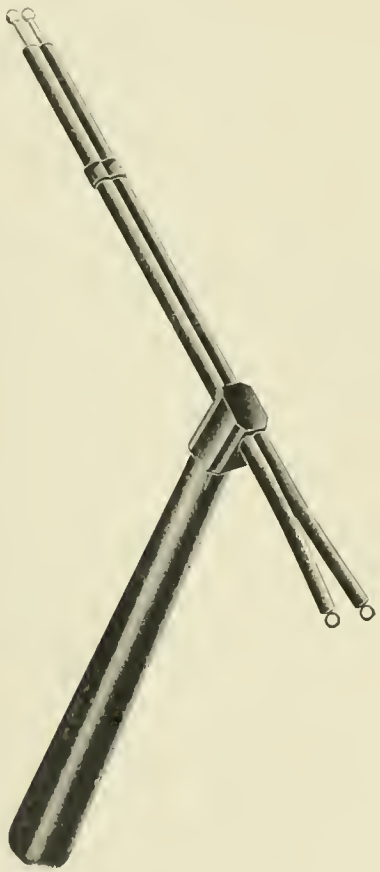
1 The ions of the physicist are not to be confused with the chemical ions resulting from electrolysis.

2 Conduction of Electricity Through Gases, Cambridge (Eng.), 1903, p. 392.

brought within a centimeter or two of their point of origin, and in the earlier writing[1] I suggested that the reaction following the use of the hyperstatic spark might be due in part to the effects of ions on the tissues. Ultra-violet rays also ionize the air, and to this ionization may be due some of the effects observed after their use.

Since my "preliminary" note was published I have found clinically that the "rays" of which I am speaking do exert a very powerful influence on the skin: and that the reaction is similar in character to that of the X-rays and of radium: and that it appears much more promptly. Like them also it may produce a curative or a destructive effect according to the intensity of the spark and the duration of its application.

Fig. 2.



The author's spark-ionizer (about ⅓ scale).

When the spark is produced between iron electrodes with one or more intervening gaps, the total length of the gaps need not exceed one centimeter. If the lamp be used in connection with a coil and suitable condenser, and an application of about five minutes be made with the sparks about 15 mm. from the tissue, a decided reaction will be obtained in soft morbid epithelial and other degenerating lesions. A similar application for fifteen minutes has resulted at my hands in the sloughing out of a lupus nodule. It is important, therefore, that care should be used, especially at the beginning of treatment in any given case. Besides by myself these condenser spark radiations have been used by Dr. Robt. Abbe, Dr. Milton Franklin and Dr. W. H. Dieffenbach, of this city, and by Dr. J. W. King, of Bradford, Pa., with as they have stated to me highly gratifying results.

The use of X-rays in connection with uterine cancer and some epitheliomatus conditions of the buccal cavity present mechanical difficulties that it is sometimes inconvenient to overcome; while ultra-violet rays have not, so far as I am aware, been employed in these conditions. These mechanical difficulties, however, need not stand in the way of those who desire to employ the ultra-violet plus the electrons or ions (or whatever they may be) in these conditions, as the open spark arranged in the form shown in Fig 2, which I have provisionally called a spark-ionizer, can be readily introduced through a speculum or other suitable shield. The particular form of the appliance, as here shown, can, of course, be modified to suit any special requirement.

Fully aware that ultra-violet rays, as well as the ions are superficial in their action, being absorbed by a very thin stratum of tissue, I have, on more than one occasion, been surprised by the evidences of a deeper influence.

The following recent experiment, however, has apparently furnished the explanation: I exposed a piece of velox paper through a glass negative, and obtained a fully-timed print in about one hundreth of the time that would have been required to get one of similar character with a 32 c.p. incandescent light. As neither the ultra-violet rays nor the ions will go through glass, the action on the photo-paper was due wholly to the luminous rays, which, though greatly inferior in *volume* to those from the incandescent filament, very greatly surpassed them in *intensity*. When optically analyzed the entire spectrum from red to violet was exceedingly brilliant.

As the longer wave-lengths of light penetrate the tissues farther than the shorter ones, the cause of the deep reaction of the condenser spark was thus readily explained.[1]

We have thus in the condenser spark three forms or types of energy in coincident action, namely, the intense and penetrating luminous rays; the more superficially acting ultra-violet rays; and the furious bombardment by the ions. To this combined action, the terms triradial or triergic may with propriety be applied.

As regards the technic my experience leads me to recommend: (1) If the appliance be used with a coil, a single Leyden jar should be employed, with inner armature connected with one of the secondary terminals, and the outer armature with the other terminal of the secondary of the coil. The lamp is then connected directly to

1 Radio-Praxis, Medical Record, March 7, 1903.

1 Contrary to the general opinion, I believe that the results of the Finsen treatment are mainly due to the luminous rays rather than to the ultra-violet.

the secondary by its cords. I prefer a Wehnelt interrupter adjusted to give a current of five to six amperes through the primary of the coil. The armatures should not exceed 40 square inches of foil in each. This is for the three spark lamp. For the one spark "ionizer" a lesser amount of energy is preferable. The first application should never exceed ten minutes. (2) If connected with a static machine use two Leyden jars the armatures of which should each have a foil surface of at least 100 square inches. The outer armatures of the jars should be connected together, and the lamp terminals connected to the pole pieces of the static machine. The first application should not exceed fifteen minutes with the spark from 15 to 20 millimeters from the lesion.

256 West Fifty-seventh Street.

EXTRA-UTERINE PREGNANCY: ITS DIAGNOSIS. REPORT OF CASES.

BY ISAAC IVAN LEMANN, M.D.,
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A MERE casual dipping into the contemporaneous literature will serve to convince that ectopic gestations are not of so uncommon occurrence as is the general impression. It is difficult, however, to obtain accurate data as to their frequency and the meager statistical facts occasionally furnished differ widely. Douglas, for instance, quotes Bandl as saying that extra-uterine pregnancy occurred once in every twelve thousand pregnancies, while Price had found it to occur eighty-three times in eight thousand pregnancies. Douglas's own work for fifteen years approximated four cases annually. Williams says that prior to 1876 extra-uterine pregnancy was considered so rare an affection that Henning stated that even the directors of large obstetrical institutions might never encounter a case, and Perry was able to collect only 500 instances from the entire literature. It was only with the gradual development of abdominal surgery that the relative frequency of such pregnancy became recognized. Schrenck, in 1892, collected 610 cases, which had been reported in the preceding five years, and recently many operators have placed on record large series, Kustner having operated upon 105 cases in the course of five years, while Noble encountered extra-uterine pregnancy in three to four per cent. of all his laparotomies. Vineberg reports nine cases that came under his observation in the course of one summer. In a clinic averaging over six hundred gynecological cases a year, it has been my fortune to see three cases of ectopic gestation this past year.

It is doubtful, to say the least, whether it would be possible from the tabulated experiences of one man or set of men to obtain a true idea of the frequency of the condition, owing to failure on the part of the profession in general to recognize it. As Vineberg has well said: "The affection has not met with the same alertness on the part of the profession that appendicitis, for instance, has encountered for some years past." When that same attitude of alertness, of suspicions toward obscure and hitherto little understood menstrual irregularities and pelvic pains, shall prevail, we shall find, as I think we begin already to find, the recorded number of ectopic gestations increasing.

The importance of this attitude of suspicion is emphasized by the history of Vineberg's nine consecutive cases in but two of which was the classical picture of the disease present.

With this idea well fixed in the mind, we may enumerate briefly the symptoms usually held as leading to the diagnosis of ectopic gestation and consider the question of differential diagnosis.

The history of amenorrhea for a month or two accompanied by the usual signs of a normal pregnancy occurring in a woman previously sterile for a number of years; "this amenorrhea being followed by a period of irregular, intermittent bleeding from the genitals, the discharge of a decidual cast from the uterus, and occurrence of occasional severe colicky pains in the lower abdomen, would lead one to the diagnosis of extra-uterine pregnancy; and if upon vaginal examination we should find the uterus slightly enlarged, though not to the size proper to an intra-uterine pregnancy of the period indicated by the history, and further if we should find to one side a fluctuating boggy mass pushing the uterus over to the other side, we should have present all the possible evidence in favor of our diagnosis. When shortly after such an examination we find our patient in a state of collapse, with all the clinical manifestations of internal active hemorrhage, we have been further confirmed in our opinion by the occurrence of intra-peritoneal rupture. But it is precisely these clean-cut unmistakable cases that are of rare occurrence. We must remember in the first place that the symptoms of rupture may be the first to direct our attention to the possibility of the existence of any serious intra-abdominal condition, in fact the woman herself may not previously have been aware of anything amiss. In the presence of such a state of affairs, of course, the question of differential diagnosis is of minor importance, indications for celiotomy being the same no matter what the cause of the intra-peritoneal hemorrhage. In such cases to arrive at a proximate diagnosis we should have to rely in the main upon the previous history. Pelvic examination would yield but little information, the mass, if it had existed, having ruptured and the blood being free in the abdomen.

The history of irregular bleeding following an amenorrhea in a woman presumably pregnant but who had been previously sterile for a number of years leads directly to the consideration of what is probably the most interesting point in the differential diagnosis from early intra-uterine abortion. It will often, in fact usually, be im-

possible to determine from the woman's story the difference between the early abortion and the decidual cast of extra-uterine pregnancy. Both conditions may give rise to a more or less continued or intermittent hemorrhage. In both conditions the uterus may be slightly enlarged. The fact that the patient has been previously sterile or is known to have been the victim of previous pelvic inflammatory trouble, will not lend much weight to the side of tubal pregnancy, as against intra-uterine abortion, nor would the opposite history exclude the extra-uterine gestation. We may be helped by a history of recurrent pains, whether sharp and lancinating, or bearing, boring or dull and throbbing, more especially an account of one or more spells of faintness indicating repeated partial ruptures. But of greatest importance is the vaginal examination. We must not content ourselves with the probable diagnosis of early abortion when presented with a history such as I have tried to outline, but should make careful pelvic examinations, always, of course, with due precautions of cleanliness, and determine for ourselves the true state of affairs. Remember that we may have no pains, no signs of rupture and remember that it is just in this quiescent state that we may hope to be of the greatest assistance. Even upon examination we may find the diagnosis still problematical. If we find a fluctuating mass in the broad ligament to one side we are justified with such a history to make a diagnosis.

Illustrative Case I.—Lizzie Bolden, colored, age twenty-six years. Admitted to the Charity Hospital September 27, 1903. Well nourished. Puberty established at sixteen. Three children. Oldest nine years, youngest one year and a half. One miscarriage five years ago. Has had pain in both groins and back ever since this miscarriage. Previous to two months ago menstruation was perfectly regular, lasting three days at each period. For past two months has been bleeding intermittently for a day or two at a time. Vaginal examination revealed a small fluctuating tumor about an inch and a half in diameter to the right of the uterus. Tumor was freely movable and stood in the same relation to the uterus as the tube would. The right ovary was easily palpated and found normal. Left adnexa normal. Uterus normal in size. Patient gave a history of having passed a decidual cast. Here the history of the patient alone would have led us rather to the diagnosis of very early abortion or of hemorrhagic endometritis. Pelvic examination enables us to localize the trouble in the tube, but left us in doubt as to its precise nature. Salpingitis might very well accord with the history and account for the uterine hemorrhage. However, the tube was freely movable and the ovary was normal in size and mobility—all presumptive evidence against inflammatory trouble. Armed with the suspicion on which I have endeavored to lay stress, I ventured upon a probable diagnosis of extra-uterine tubal gestation. Whether tubal gestation or salpingitis with that amount of fluid accumulation within the tube, the condition called for operative interference. Upon opening the abdomen, October 1, 1903, I found the right tube distended to the size already mentioned, adherent to a coil of intestine not easily separated. After ablation the tube was opened and found to contain a fetus of about six weeks. Patient made an uneventful recovery.

Just here I may remark upon the relative safety of an exploratory laparotomy as contrasted with the very great danger of a curettage in such cases as this. I would not counsel rash invasion of the peritoneum, but exploratory laparotomy should be an operation without mortality. On the other hand, what must have been, in such a case as this, the calamitous consequence of a curettage, that operation so simple and supposedly so devoid of risk, undertaken for the cure of a supposed endometritis, possibly dependent upon the salpingitis? Unavoidable rupture of the pregnant tube, internal hemorrhage and death of the woman.

From normal pregnancy there should be no differentiating the abnormal gestation. The soft fluctuating body of the uterus plainly continuous with the cervix can hardly be confused with the tube. Small ovarian cysts with torsion of the pedicle may simulate ectopic gestation in symptoms both subjective and objective. Douglas points out that the points of difference here would be: (1) Signs of pregnancy; (2) amenorrhea; (3) passing of decidual membrane in the history of an ectopic; (4) upon an examination we should find the uterus drawn over to the same side by the taut pedicle of the cyst, whereas that organ would be displaced invariably to the opposite side by the pregnant tube.

But not only in the early (unruptured) stage is the diagnosis of ectopic gestation difficult. Even when the pregnancy has continued to term and the patient has withstood the, it may be, repeated ruptures of the gestation sac with limited hemorrhage and the dangers of missed labor, and even come into the depths of sepsis, the diagnosis is obscure and perhaps impossible. I may best indicate this to you by the relation of

Case II.—Ollie Wilson, colored, aged twenty-nine years. Admitted to Charity Hospital April 14, 1903. Personal history: Began to menstruate at thirteen years. Regular periods four to five days, slightly painful. One child, three years ago. No miscarriages. Present illness began eleven months before admission. Pains in hypogastrium, violent, attended with vomiting and prostration severe enough to cause patient to go to bed for some time. Since that time has noticed gradual development of tumor in hypogastrium. Has had severe attack of vomiting and severe abdominal pains. Menstruates regularly, but periods last from seven to nine days. No history of menstrual cessation prior to above symptoms. Occasional chills followed by fever. Fever often without chills preceding it.

Status præsens.—Septic appearance marked; septic temperature. Tumor soft and fluctuating, filling hypogastric zone and rising midway between umbilicus and ensiform cartilage. Extremely painful and tender. Chill twenty-four hours after admission. Vomits persistently since that time. Pulse hard and rapid, without sustained volume. Vaginal examination shows tumor apparently connected directly to uterus. Difficult to define accurately limits of tumor owing to pain. Cervix hard; os small. Adnexa not palpable. Condition is one of a suppurating encysted collection. History is suggestive of extra-uterine pregnancy. Probable diagnosis prior to operation: Suppurating ovarian or dermoid cyst.

Operation.—Upon opening the abdomen, a large fluctuating mass, adherent to intestines and in part to abdominal parietes above, presented itself through the incision. Aspiration showed this to contain a slightly greenish-yellow non-purulent watery fluid. The cyst was incised and contents allowed egress. Posteriorly and a little to the left of this was another cyst, aspiration of which revealed the presence of a greenish, serous and slightly blood-streaked pus. Attempts to free the cyst from surrounding adhesions resulted in its rupture. It was found on exploration of its cavity, to contain fetus, apparently full-term, showing conditions of beginning maceration. Placenta well formed. Fetus removed after ligation of cord. An acute exudative peritonitis was present involving the entire peritoneal surface, both parietal and visceral, from pelvis to diaphragm. Exudate was removed with sponges and the abdomen and pelvis flushed with normal saline solution. No attempt was made to remove the placenta. Gauze drains were passed up to the diaphragm and down into the pelvis to those points indicating the severest local peritoneal infection, the end of these drains being brought out through the abdominal wound. This was sutured to the abdominal wall and the sac cavity was filled with iodoform gauze. The abdominal wound was partially closed with interrupted through-and-through silkworm sutures. Death eight hours after operation from post-operative shock and effects of toxemia prior to operation. No post mortem. This patient was profoundly septic upon admission and her very grave condition demanding immediate operative interference was plainly due to some collection of pus within the cyst. What the nature of that cyst originally was could not be made clear without the operation urgently demanded for the relief of the condition. But while confessing one's inability to make this positive diagnosis at this stage, must not our thoughts necessarily come back to the question: Could not the diagnosis have been made earlier, before the woman had became septic and when the chances for recovery would have been enormously increased? Was not the history of repeated pains and prostration with the progressive growth of a fluctuating tumor sufficient reason months before to arouse the suspicion of the attending physician and to cause him even in the absence of a positive diagnosis to insist upon an exploratory operation and an inspection of the pelvic condition Did not the history at least call for a careful bimanual examination early in the disease and would not this have revealed the presence of what was then a small fluctuating tumor. This latter would have demanded surgical procedure.

I end as I began. I believe:

1. This disease is a far more frequent one than most of us now believe it to be.

2. By maintaining an attitude of alertness and by carefully investigating all conditions of menstrual irregularities and colicky pains, we shall find ourselves warranted in establishing an accurate diagnosis and saving the lives of some patients who would otherwise perish.

3. That when the diagnosis is obscure in the presence of a boggy or fluctuating mass to either side of the uterus, we are justified in doing an exploratory operation either through the abdomen or the vaginal fornix.

PANCREATITIS.

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The pancreas, the most sequestered organ in the abdomen, has at last yielded up in part the secrets of its obscure and incorrigible inflammations. The frequency with which it is associated and indubitably caused by gall-stones makes it a more easily comprehensible and less forbidding disease to the surgeon. The violence of onset and the gravity of the symptoms render it of great importance to the diagnostician. The intricacy of its physiology and the uniqueness of its varied tissue changes open an inviting field to the pathologist, while the unraveling of its complex phenomena and etiology make it at this time of peculiar interest to the pure scientist.

Inflammations of the pancreas were formerly supposed to be very rare, but the result of recent investigations and the accumulated work of clinicians have shown it to be much more frequent than it was supposed to be, and, moreover, certain curable forms may remain undiagnosed and leave no trace behind.

Acute Pancreatitis.—Fitz, in his original classical description, divided pancreatitis into hemorrhagic, gangrenous, and suppurative. This is a most accurate pathological division, and in some cases the variety can be designated, but usually they shade into each other, and thus appear as progressive stages of the same process with a common cause. The clinical classification of Robson, therefore, into acute, subacute and chronic would seem to be the most desirable.

It can occur, therefore, with or without hemorrhage, suppuration, gangrene, or fat necrosis.

Etiology.—The causation of this disease, ever since it has been recognized with any degree of frequency, has been shrouded in mystery. Many theories were offered, and the explanations required further explanation. Like most things, when the true explanation is found, it turns out to be very simple. Mr. Mayo Robson, in connection with his gall-stone work, observed cases of induration of the head of the pancreas with gallstones in the common duct. It had been noticed by pathologists that at necropsy pus can usually be expressed from the duct of Wirsung in these cases.

Robson has drawn our attention to the obvious fact that a stone obstructing the common duct at the ampulla of Vater must necessarily obstruct the duct of Wirsung, and also that inflammation of the bile duct as the result of cholelithiasis is perhaps the most prominent etiological factor in the chronic, indurative, interstitial, or cirrhotic form.

Kennan, in 1896, Körte and Lancereaux, in 1898, and Oser observed this coincidence; but Robson, who saw his first case in 1892, seemed to be the first to grasp the comprehensiveness of the occurrence and to bring it succinctly and forcibly to the attention of the profession in 1900.

The anatomy and mechanism of this process may be briefly quoted from Opie as follows:

"The orifice of the diverticulum of Vater constitutes the narrowest part of the bile channel, and here small calculi not infrequently become impacted. A small stone lodged in the diverticulum may occlude its duodenal orifice, and, too small to completely fill the diverticulum and occlude the two ducts that enter it, may convert the latter into a single closed channel along which bile may be forced by the gall-bladder. Bile thus injected into the pancreatic duct causes, as will be subsequently shown, the condition known as acute hemorrhagic pancreatitis. This lesion does not commonly follow the expulsion of a gall-stone from the common duct. For its production it is necessary that the diverticulum of Vater be capacious, with a length at least greater than the diameter of its duodenal orifice."

As bearing upon the possibilities of the entrance of bile into the pancreas it may be mentioned that in dogs death has been caused in twenty-four hours by the injection of 5 c.c. of bile into the pancreatic duct.

Opie, supported by Welch's investigations, claims that the bacteriological findings have been so variable and inconstant that they do not enter into the etiological factorage, but are merely secondary invaders of injured tissue. He has placed the relationship between gall-stone in the ampulla of Vater and acute pancreatitis upon the same fortified position as Robson did between the common duct stone and chronic pancreatitis. He had the previous observations of others and his own careful study of the post mortem on Osler's case, operated by Bloodgood, of acute hemorrhagic pancreatitis followed by death, and finding a small stone at the duodenal papilla.

To this carefully worked-out case he has added the reports of seven others in which the stone was actually acting as a ball, occluding the exit of both ducts into the duodenum and allowing the bile to flow directly into the pancreatic duct. He properly infers that in many cases the stone may be temporarily lodged long enough to cause damage to the pancreas, and then escape, leaving no actual evidence of its former impaction. He also tabulates forty-one cases of acute pancreatitis with cholelithiasis, certainly enough to establish an undoubted causal relationship and food enough for further theorizing as to the rôle of infection associated with gallstones and productive of pancreatitis.

Robson and Moynihan contend in their monograph that the immediate and essential cause of pancreatitis is bacterial invasion, but mentions as exciting causes biliary and pancreatic calculi, trauma, gastro-duodenitis, gastric and duodenal ulcer, and carcinoma, and certain infectious diseases, such as typhoid fever, influenza, and mumps. In some cases occurring suddenly in perfectly healthy persons the exact cause cannot be designated.

Fat Necrosis.—Aside from the usual pathological changes which take place in gangrenous and suppurative inflammations, the distinctive tissue change in this disease is fat necrosis. This occurs when, as the result of obstruction of the excretory duct, the fat-splitting ferment of the pancreatic juice penetrates into the tissues about the organ.

The obstruction is gradual in chronic pancreatitis, and the penetration of the pancreatic juice is so slow that minute foci occur. In acute hemorrhagic pancreatitis or its later stages, gangrenous pancreatitis, the fat necrosis is more widely disseminated. The retrojection of bile into the pancreatic duct, causing necrosis of the parenchyma of the gland, dams back the pancreatic juice that is present, thus causing fat necrosis of the fatty tissue surrounding the pancreas. The fat is split into its component fatty acids and glycerin. The latter is absorbed, and the former unites with the lime salt to form yellowish-white, non-elevated, opaque spots about the size of a millet seed. They resemble miliary tubercles or carcinomatous nodules, but occurring sometimes in the subcutaneous fat and regularly in the subperitoneal fat as well as the omentum, one should be able to recognize them by this means as well as by their brittle feeling, and recognize that they point almost as unerringly to disease of the pancreas as jaundice does to disease of the liver.

Symptoms.—Acute pancreatitis is characterized by sudden onset of severe agonizing pain in the upper abdomen, producing syncope or collapse, recurring in paroxysms and aggravated by attempted motion. The pain is described as most excruciating, almost invariably requiring

morphine for its relief. Immediately following the pain, tenderness, well-marked between umbilicus and ensiform appendix, makes its appearance.

Distention of the upper abdominal zone succeeds the pains, becoming general late in the disease. Cyanosis of face and abdomen has been noted in a number of cases, and in one was the most suggestive symptom.

Usually vomiting is an initial and most annoying symptom, first of food and then of bile, and sometimes blood. Though it is not always present it may be very severe, and increases the pain, thus adding greatly to the distress of the patient.

Slight jaundice from coexisting catarrh of the bile tract may be present. Facies present a pinched and anxious expression, and may be Hippocratic in its depiction of suffering and impending death.

The pancreas is generally enlarged, but the great pain, exquisite sensitiveness, and marked distention preclude an accurate palpation of the organ in its deep-seated position.

Glycosuria is rare, because, as demonstrated by Opie, the disease primarily attacks the excretory apparatus and does not affect the islands of Langerhans, which preside over the glycosuric function. In only two of forty-one cases of hemorrhagic pancreatitis, and in only three out of forty cases of gangrenous pancreatitis collected by Körte, was sugar present.

Effort has been made to recognize clinically the fat-splitting ferment in the urine by chemical test. Ethyl butyrate, carefully purified when acted upon by a fat-splitting ferment, is decomposed with the formation of butyric acid, which gives an acid reaction to the solution.

Ascites may result from pressure on the portal vein, from an induration or abscess in the head of the gland, as in a case reported by Musser. Most victims of this disease are markedly fat. The pulse is rapid and thready. Temperature is variable and not an accurate index of the severity of the condition. Hiccough sometimes occurs, and is very distressing and sometimes uncontrollable. Delirium may appear in the later stages and be quite unmanageable. Death from collapse often occurs in from two to five days, though the patient may survive longer in less acute case, and recovery sometimes follows.

Diagnosis.—Symptoms of peritonitis in the upper abdomen are suggestive of pancreatitis. Intestinal obstruction is very closely simulated. Several of the reported cases were operated on with that diagnosis, and the real condition was ascertained only after obstruction was fruitlessly searched for. Fitz's rule, quoted by Robson, is as follows:

"Acute pancreatitis is to be suspected when a previously healthy person or sufferer from occasional attacks of indigestion is suddenly seized with the violent pain in the epigastrium, followed by vomiting and collapse, and in the course of twenty-four hours by a circumscribed epigastric swelling, tympanitic or resistant, with slight rise of temperature."

When confronted with a case presenting the foregoing syndroma, one has to discriminate intestinal obstruction, biliary colic, cholecystitis, intestinal perforation, and gangrenous appendicitis.

In intestinal obstruction the distention will usually be greater and more general; in pancreatitis it is frequently limited to the epigastrium. In intestinal obstruction the peristaltic patterns can often be seen, and the waves may be heard by auscultation. The obstipation is absolute, whereas in pancreatitis the bowels may move, or at least gas is often expelled. In intestinal obstruction the vomiting finally becomes stercoraceous. Collapse is early in pancreatitis and late in intestinal obstruction. Temperature is commonly present in the beginning of pancreatitis. Its presence in the initiatory stage eliminates intestinal obstruction. The pain is lower down in intestinal obstruction and comes on more in paroxysms. Intestinal obstruction may complicate pancreatitis by strangulation or compression of the duodenum. The final diagnostic and curative measure in both is abdominal section. Fat necrosis is pathognomonic of pancreatitis when present.

Pain in pancreatitis is similar to a severe attack of biliary colic, but more intense. In biliary colic it is situated to the right of the median line and extends upward under the right shoulder. In pancreatitis it is situated in the median line and extends to the left.

In phlegmonous cholecystitis, or rupture of the gall-bladder or ducts, the acute symptoms are often preceded by tumefaction or tenderness at the tip of the ninth costal cartilage. After peritonitis ensues from any cause the symptoms of the original disease are lost in the all-too-well-known and fatal complication.

Intestinal perforation (stomach or duodenum) will present a preceding history of the more or less classical story of these affections, and the escape of gas and the advent of peritonitis after the perforation is generally attended with an absence of liver dulness. Moreover, the vomiting which is so persistent in pancreatitis, usually subsides in perforation of the upper alimentary canal, until consecutive peritonitis is declared by its return.

In perforative appendicitis, while the initial pain may be about the umbilicus, the localization of pain, tenderness, rigidity, and perhaps swelling in the right iliac fossa, render differentiation easier than perforative lesions in the upper abdominal quadrant.

Treatment.—While the futility of medicinal treatment is recognized the excessive pain requires relief, the collapse demands stimulation, and the vomiting can be ameliorated by gastric lavage.

Surgical intervention is precluded in the stage of collapse. The disease, from the indefiniteness of the symptoms, is either not suspected or the

symptoms of obstruction or perforation seem to be dominant. Should operation be undertaken upon this ground, or even upon a correct diagnosis, as urged by Mikulicz, fat necrosis will at once clinch the diagnosis. The organ may be reached through the gastrohepatic or gastrocolic omentum, or by the posterior approach at the costovertebral angle.

Mikulicz definitely advises incision of the tense-walled sac, that often feels, as described by Mayo in his successful case, "like a pudding in a tight sac." An incision four inches long and three-quarters of an inch deep in the pancreas was made by Porter, followed by drainage and recovery. A large gauze drain surrounded with guttapercha tissue is the best anterior drainage. In the gangrenous or suppurative form posterior drainage through incision in the left costovertebral angle is advised.

Roswell Park likens prompt operation in this condition to early interference in fulminating appendicitis. Mikulicz compares severe cases of acute hemorrhagic pancreatitis to an acute phlegmon in which, on account of its peculiar consistency and secretion, an unusually severe course is run. He urges incision and drainage of toxic contents, thereby escaping sepsis and further destruction of the gland.

Subacute Pancreatitis.—It is well known that some cases, while presenting a sudden onset, run a less virulent course and survive a longer time. Some have been submitted to operation, and after the diagnosis was made intra-abdominally, very little or nothing was done, ending in recovery.

Robson reserves this classification of subacute pancreatitis for such cases, without marked collapse, less severe and protracted vomiting, and without such rapid and well-marked epigastric swelling. The tenderness is much less, and distention being not so great, the enlarged pancreas may be palpated, especially under an anesthetic.

Blood or pus may appear in the fetid diarrhea consecutive to the initial constipation. A septic temperature with rigors often occurs, and then abetes, with apparent general improvement until a recurrence of acute symptoms takes place, with great weakness and loss of weight, and finally death occurs. These cases sometimes terminate in suppuration of the pancreas of pancreatic abscess, which may burrow, according to Robson (1) behind the stomach; (2) into either loin; (3) under diaphragm (subphrenic abscess); (4) along the psoas muscle (subperitoneal iliac abscess); (5) under peritoneum into left broad ligament.

Chiari reports two cases where the portion of a necrotic pancreas was passed per anum with recovery. This termination, even in pus cases, is, however, not always so favorable, and death usually takes place from prolonged sepsis of imperfect drainage.

This type of the disease being comparatively mild does not appear to demand surgical intervention or other heroic treatment so urgently as the acute form, and, suppuration occurring, the surgical indications become clear, and incision may be made over the pus collection for drainage. After a complete examination of the relations of the abscess cavity, if found to be still retroperitoneal, posterior incision at the right or left costovertebral angle may be made, as suggested by Robson. The whole hand may be introduced, pus collections broken up, and efficient drainage instituted without danger of peritoneal contamination. Robson and Moynihan reported three successes out of five cases of suppurative pancreatitis.

Chronic (Interstitial) Pancreatitis.—This is divided about equally between the sexes. Two-thirds of the cases occur between forty and sixty. It is usually the result of obstruction of (*a*) pancreatic calculi in the duct of Wirsung; (*b*) gall-stones in the common duct or ampulla of Vater; (*c*) neoplasms, usually malignant, obstructing the outflow of the pancreatic fluid.

The pancreas is easily obstructed, because the accessory duct joins the main duct within the gland in 90 per cent., or if, as occasionally, it enters the duodenum independently, the orifice is usually so small that it is unable to allow of free exit if the main duct is occluded.

Duct obstruction constitutes a propitious condition for the invasion of bacteria, which is believed by some to be the essential cause, and the access of the bile, if it does not give rise to rapid necrosis, causes a chronic hyperplastic inflammation.

In three cases of chronic (interstitial) pancreatitis detected by the stony indurated feel of the pancreas during operation for gall-stones, Riedel feared malignancy; but two of the cases recovered and remained well for a number of years, thus disproving the idea of malignancy, and the diagnosis in the third was confirmed after death. Doubtless many cases have been denied operative relief, even when the surgeon was in the abdomen, upon the supposition of the indurated head of the pancreas being distinctly malignant.

Extension of infection from inflammation of the duodenum and bile tracts may be operative in its production. Moynihan reports a case of operation where chronic pancreatitis of stony hardness was found, due to infection with typhoid bacilli nearly two years after the fever. The gall-bladder was drained, the bacilli were found in the discharge for weeks, and then ceased. The boy recovered.

Chronic interstitial pancreatitis may also occur from general or local tuberculosis. It results from excessive use of alcohol, just as cirrhosis of the liver does, and is said to be associated with the latter in one-quarter of the cases.

The chronic changes as the result of interstitial effusion gradually enlarge the pancreas, which presses against the common duct, giving the usual jaundice

Symptoms.—In patients with stomach pain, chronic jaundice, and emaciation, give the patient the benefit of the doubt, and consider chronic pancreatitis as well as cancer and gall-stones. The patient is often a dyspeptic or gall-stone sufferer. Exacerbations of epigastric pain occur, and may be replaced by a deep-seated ache. Nausea and vomiting alternate with anorexia, belching, etc. Finally, jaundice makes its appearance with attendant putty stools. Emaciation follows, and the cachexia of malignancy is simulated. Marasmus closes the scene.

In the diagnosis midepigastric tenderness serves to distinguish pancreatitis from cholangitis and cholecystitis. Undigested fibers of meat may appear in the stools. Lipura and glycosuria are late symptoms.

It is not so important to discriminate between gall-stones and chronic pancreatitis, as the treatment of both is the same. In cancer of the pancreas the secondary anemia and leucocytoses may distinguish it, and the cachexia and painless distention of the gall-bladder is corroborative. Exploratory section is justifiable in doubtful cases.

In obstruction to the outflow of pancreatic juice undigested meat fibers may be found in the feces after a meat diet. Salol, when administered in large doses, should be split into its components—carbolic acid and salicin—by the pancreatic juice, and their absence in the urine is an accurate test.

The Mayos have reported operations upon seven cases, all recovering; four were treated by cholecystostomy, and three by cholecystenterostomy, twice to the transverse colon and once to the duodenum, the results being as good where the colon was used as the duodenum.

In the treatment, appropriate operations on the bile tracts to free them from obstruction, followed by drainage, is the indication. The results have been quite satisfactory. Robson lost only one case out of twenty-two operations, and Mikulicz collected thirty-six cases with five deaths.

LAUNDRY HYGIENE.

BY IRA S. WILE, M.D.,

OF NEW YORK.

"Cleanliness is near akin to godliness." Wesley's dictum daily grows in grandeur and strength. Cleanliness is now one of the main supports of organized communities and a most prominent factor in preserving them from disease and decay.

From organizations of men for self-betterment, for mutual protection and development, have arisen our great systems of manufactories. From cooperation and division of labor have come the trades and professions. Regard for the general health has directed the management of industries along lines of safety so that no portion of a community need suffer unnecessarily because of industrial progress. There has been evolved a higher industrial morale and more rigid sanitation, based upon the most searching examination of the effect of each industry upon the community as a whole and upon the workers as a class. Exposure to undue congestion, to filth, to disease, has been gradually lessened. The factory laws and tenement inspections evince the lively interest taken by the State in preserving the health of the great mass of workers. Cleanliness has become an index of industrial hygiene. The state of civilization may indeed be gauged by the soap-bill of a nation.

To keep pace with the gross advancement individuals have had to give especial attention to the problems of personal hygiene. To meet the complicated conditions arising from the division of labor, it has been necessary to support a class with the principal duty of providing facilities for the proper cleansing of articles of attire and household use. The laundry system has grown up to relieve the needs of the cleanly and satisfy the demand for hygienic apparel, etc.

Disregarding the general form of organization, it is not unfair to ask if laundries in themselves are hygienic. All sorts of clothing, bedding, towels, etc., are collected from all sorts of people with all sorts of diseases. This mass of soiled, often polluted and infected, material is collected, assorted, marked, carried hither and thither by employees before being subjected to the heat and chemical process incident to thorough laundering. During the manipulation preceding sterilization, the soiled articles are sources of danger to the health of the various employees handling them. In the processes of drying, ironing, reassorting, checking and wrapping, the employees become possible sources of infection to the owners of the various articles passing through their hands. While this is equally true for machine and hand laundries, in the latter the dangers to either employee or patron are increased because of increased handling. As an offset, however, is the lessened amount of infected material handled at hand laundries. Bearing these two aspects in mind it seemed not unnatural to enquire as to the precautions taken by laundries to protect their employees from infection and prevent the transmission of any disease from employee to patron. To get a little light on the question a personal letter was sent to every laundry in the city of Rochester, N. Y., briefly stating the information desired by the writer and asking for answers to five questions enclosed on a separate sheet of paper. Names were not to be signed to the replies. No evidence of good faith was requested beyond the courtesy of a response. The questions submitted were as follows:

1. What precautions, if any, do you use to prevent infection of employees in handling soiled materials from time of collection to delivery?

2. Do you have much illness among employees? If so, of what character?

3. Do you know of any specific diseases which have been spread? If so, what ones?

4. What means do you have of protection of patrons from diseases of employees?

5. Is tuberculosis common among employees? Among diseases to be considered I should like to suggest as examples, typhoid, scarlet fever, smallpox, syphilis, diphtheria, gonorrhea, infected fingers, inflamed eyes, etc.

The answers vary in methods of expression, but are practically uniform as to statement of existing conditions in the trade.

1. No especial precautions are taken to prevent infection of employees. Particularly filthy materials are not accepted, or, if accidentally received, are not laundered. Articles of wearing apparel, towels, sheets, pillow cases, are not received from places where contagious diseases are known to exist. "We *never* call at a home where they have a sign put up by the Board of Health." The marking room is kept as clean as possible and thoroughly scrubbed at least once a week.

2. The variations in answers were from plain "No" to the interesting statement "Girls become stronger and gain weight in the laundry." As far as could be learned illness is no more frequent than in any other business establishment, employing large numbers of workers. The ailments are merely of ordinary types and in no way dependent upon the vocation.

3. No specific cases of contagion have been found due to or even attributed to handling infected garments, underwear, sheets, towels, etc. Among the employees, there does not appear to be any particular susceptibility to the various infective micro-organisms. One laundryman was expressly explicit: "We have not had one case of contagious disease in our place since January 3, 1880, when I first entered the laundry and we handle tons of goods every week." This statement is probably a little more enthusiastic than accurate. It does emphasize, however, the comparitive freedom from contagion of those handling the soiled clothes of a city.

4. From the answers as to means of protecting patrons, several are worthy of attention. As a matter of fact, no systematic, intentional protection to patrons is deemed necessary. Exposure to heat and chemicals along with mechanical agitation destroys the hardiest of bacteria. During the transition from soiled to clean clothes contagion is abolished.

From the diseases of employees no more sufficient protection to patrons can be desired than that gained during the laundering process. That steam, lime, potassium permanganate, oxalic acid, sulphurous acid and numerous other chemicals employed afford almost complete sterilization cannot be denied. Some concerns stated that they refuse to employ girls appearing or known to be unhealthy. It is not strange that one indignant soul should write: "We have yet to hear of the first instance where disease was transmitted from employees to customers." That is more readily believed than the value of another man's admission that he used hygienic soap to wash the clothes. Oh, Hygiea! how many crimes are committed in thy name!

5. Tuberculosis is no more common among laundry employees than among the workers in any modern, regularly inspected, hygienic, light, airy factory. The moist atmosphere, the frequent scrubbings and lessened dust, tend to keep the omnipresent *Bacillus tuberculosis* in marked subjection. The suggestion of one scientist was thankfully received: "Starching is the best employment for consumptives." Possibly laundries thus possess in starching a beneficent prophylactic measure.

This résumé of the answers to my queries may be of interest to others. It is undeniable that with all the disease germs, known and unknown, which are daily taken to the laundries, little is heard of disease being spread through their medium. My answers are based merely upon established public laundries and not upon an investigation of laundresses who "take in washing" or yield their services at the homes of their patrons.

How do the statements quoted correspond with the facts as observed and recorded by medical workers?

In 1877 the *Lancet* appointed a commission to investigate the laundry system of the time with a view to ascertaining the dangers of disseminating disease through the system then in vogue. A few instances were found where disease had been spread among the families of laundresses and those of their patrons. Because soiled linen was taken to the homes of the laundresses, the danger therefrom was pronounced imminent. Following the report of the *Lancet* Commission, large public laundries were instituted to secure hygienic handling of soiled linen.

From the health laws of England we learn that the hours of labor are restricted to sixty hours per week for women and thirty hours per week for children; the temperature of the ironing rooms must be regulated; ventilation and carrying off of steam from the wash house is obligatory; clean floors and general cleanliness is demanded. This is the present extent of the English laws protecting the health of laundry workers.

In 1896, in the Council of Paris, discussion arose concerning the risk of the spread of infectious fevers through laundries. A commission, with Dechamps at the head, was appointed to investigate the subject. It was recognized that public laundries and municipal disinfecting plants could handle satisfactorily the soiled linens from contagious cases providing notification of the Health Bureau was demanded. The community was unprotected, however, when the contagious disease was unrecognized or belonged to the category of unreportable disease. It was not necessary, nor is it to-day, to report venereal diseases, purulent local infections, dysenteries, tuberculosis, etc. Linen from cases of this nature was

regarded as a source of public danger. The intelligent report advised sealed sacks for transportation of soiled linen to laundries and disinfection before sorting and especial attention to pus or blood-stained articles.

Abbot, discussing the dangers from hospital laundries, urges immediate, moist disinfection of dirty linen. He mentions the danger of spreading disease through dust from dry sputum, blood, pus, feces, etc.

Viola and Morello have shown the high bacterial content of soiled linen and their resistance to weak disinfectants. From their work it is apparent that disinfection should be obligatory before many persons are permitted to handle the disease-laden materials.

In "Risks and Dangers of Various Occupations," Parry does not include laundry work as one subjecting the worker to any particular liability to disease. Dammer refers to the frequency of bronchitis and the diseases of women among laundresses. Arlidge carefully analyzes the work of laundries and attributes the main ailments of laundry workers to the character of their work. He mentions "exposure to steam, long immersion of hands and forearms in very hot alkaline and soapy water, prolonged standing and considerable labor falling on trunk and upper extremities." Little is said of the danger of infection from handling the soiled infected linen. The merest suggestion exists in his reference to the frequency of "erysipelas, onychia and festering sores." Bronchitis is prevalent because of the inhalation of steam, the sudden changes of temperature incident to going to and from the hot steaming washroom and the cooler drying room. No especial stress is laid upon the possibilities of tuberculosis infection from sorting dry, bacilli-laden handkerchiefs, towels, sheets, etc. He quotes an unnamed writer (1891) who gave, as the results of his investigations at Brompton Consumption Hospital, the report that for two and one-half years, two and one-half per cent. of the patients admitted were laundresses.

Dechamps reported that tuberculosis was uncommon among washerwomen. In 1902, the report of the Metropolitan Hospital of New York City did not show a laundress in its statistics of occupations of tuberculosis patients. In a symposium on the "Relations of Phthisis to Factory and Workshop Conditions" (*British Medical Journal*, 1902), due consideration was given to the pervalence of tuberculosis among laundresses. English institutions are discussed and the predisposing causes, mentioned as existent in England are not applicable to this country. Commonness of intemperance and "beer lunches" among laundry workers is not true in America. Much force is given Brouardel's statement that alcoholism predisposes to tuberculosis. The danger to sorters from dried tuberculous material is, however, properly recognized.

In the statistics of Wandsworth and Clapham Union Infirmary, drawing its patients largely from laundresses, Miss Deane reports that, during 1899 and 1900, 8.7 per cent. of laundresses admitted had tuberculosis as against 5.3 per cent. among all others admitted. For seven and one-half years preceding 1900, 9.68 per cent. of laundresses had tuberculosis while only 5.69 per cent. among others actively employed and 7.02 per cent of the unemployed patients were tuberculous. Isleworth Infirmary gave 10.9 per cent. for tuberculosis among laundresses and 4.5 per cent. for non-laundresses.

To get a few medical figures I have taken the reports of St. Francis Hospital, 1903; Presbyterian Hospital, 1903; Mount Sinai Hospital, 1903; German Hospital, 1899; Methodist Episcopal Hospital, Phila., 1899.

The accompanying table shows the total number of cases and the percentage of laundry workers to the total number. For comparison, a few other vocations receive slight notice.

	1	2	3	4	5	Total.
Total cases.	2,301	2,912	3,322	769	3,091	12,395
Percentage, Laundry workers.	1.0	1.5	0.15	0.3	0.35	0.69
Laundresses	19	40	3	1	11	....
Laundrymen.	4	5	2	1	....	....
Clergymen.	17	7	....	15	....	....
Factory girls.	13	17	....	...	....	....
Clerks	55	93	76	16	85	....
Dressm'k'rs.	...	35	....	...	....	....
Tailors.	...	....	122	...	84	....
Tailoresses.	...	....	34	...	....	....
Barbers.	...	....	....	...	15	....
Salesmen.	...	....	....	...	27	....
Salesw m'n.	...	....	....	...	2	....

I regard these and similar statistics as of very little value, wherefore their fewness. They afford no basis for medical reasoning. As a source of information regarding relation of occupation to health they are useless. They fail to differentiate medical from surgical cases. They do not show if a patient's presence in hospital was due to disease or injury contracted during period of employment or idleness. The effect of occupation is lost in cases of married women who are for the most part registered as housewives. It is apparent that a laundress may marry and die, for example, of a tuberculosis whose origin dated to the days she sorted linen. The term laundress is too general to give reliable information. It covers the "day-out washerwoman," the worker in a hand laundry, the attendant at a large machine laundry. It fails to include the very numerous handlers, sorters, wrappers, who may give their occupations as clerks or even factory girls. The drivers who first handle the soiled linen are wholly ignored. Aldridge rightly noted the difference in the influence of environment. On the one hand, there is the laundress who works at the house of the wealthy, the poor woman who takes her wash home and, on the other hand, the

girl who goes to work in a laundry. The conditions under which the same general work is done vary vastly in hygienic import.

The source of the statistics must also be considered. One hospital draws more largely from one sort of types, class, race, workers, than another. For example, 3 had no clergymen while 1 had 17: 3 had five laundry workers and 2 had 45.

The Isleworth Infirmary was chosen for figures on tuberculosis because laundresses were particularly frequent as patients. If we could get the sum total of all hospitals, with a finely analyzed system of occupational statistics, figures might be more valuable. The number of patients in any one or number of hospitals should be compared also with the estimated number of workers, in that particular trade or profession, living in the community from which the hospital draws its patients. This is open to objection, however, because the mere number of patients of a class in hospitals presents little information regarding health of the occupation. For instance, a fire might send 25 laundresses to various hospitals. The increase of laundresses in the occupation statistics might give unmeant testimony to a health statistician unacquainted with the catastrophe swelling the per cent. list without leaving a trace of the real cause.

These various criticisms of my quoted figures demonstrate the hopelessness of ascertaining from medical sources the dangers to laundresses from handling soiled linen. Until some other facts and figures are available, it appears necessary to coincide with the opinions expressed by the laundrymen themselves.

Laundering appears to be an efficient hygienic method of promoting cleanliness without marked danger to patron and with comparative safety for the employee.

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Dr. Frazier Elected to Episcopal Hospital.—Dr. Charles H. Frazier, Dean of the Medical Department of the University of Pennsylvania, has been elected to the surgical staff of the Episcopal Hospital. He takes the place made vacant by the resignation of Dr. R. H. Harte. The votes for Dr. Frazier and Dr. James P. Hutchinson were so close there is talk of increasing the staff from four to five and appointing Dr. Hutchinson to the extra position.

SOME REMARKS ON DIPHTHERIA BACILLI.

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Diphtheria bacilli have been classified according to their size into long, short, and medium bacilli. As a general rule, the long variety is the most virulent. The majority of later observers have classified them according to the manner in which they stain with Löffler's blue, into granular, barred and solid forms; the granular forms being the most characteristic.

Drs. Westbrook, Wilson and McDaniel, of the Laboratory of the State Board of Health of Minnesota, made an extended and painstaking study of these varieties as observed in their State, and subdivided them into types according to their size and other minor differences. Before giving the details of these types, I desire to state that though in cultures from throat exudates some solid forms of diphtheria bacilli may be found, these, by themselves, do not authorize the diagnosis of diphtheria, however characteristic their arrangement may be.

The granular forms are of seven types, and the presence of bacilli of any of these types is by itself characteristic of diphtheria. The second group or barred forms present six types, and likewise the solid forms.

The granular forms show spherical or ovoid granules. In all the types, excepting type B, the granules are methachromatic, taking a reddish tint with fresh Löffler's blue. The granules are usually at one or both poles or may occur elsewhere.

The bacilli belonging to the second group show a distinctly barred appearance as of an actual severance of pieces of protoplasm. The darkly staining portions vary in the intensity of coloration, but do not show methachromatism.

The smaller types of this group, types D and E, are not characteristic, and look very much like the *Bacillus xerosis*.

The solid forms include solidly staining forms of all shapes and also some having the appearance of diplobacilli.

This diplobacillary form includes those which many call pseudodiphtheria bacilli. The bacilli of this group, when found alone, will not suffice to make a diagnosis of diphtheria.

During the past year of laboratory work I have carefully noted the different types found in swab and culture examinations with the object of ascertaining whether here in Florida the same types are found as in Minnesota.

The outfits furnished by the laboratory for the collection of samples of suspected diphtheria, do not contain any blood-serum tubes, but only a sterilized swab. This swab is planted on blood-serum as soon as it arrives at the laboratory, and examined after eighteen or twenty hours' incubation. A smear preparation is made from each swab after it is planted on blood-serum. The blood-serum is prepared according to the formula

of Löffler, and care is taken that it is always fresh.)

In 186 samples where diphtheria bacilli were found, 141 showed granular types and 45 barred types.

Type A was present in 39 cases.
Type B in three cases.
Type B′ in two cases.
Type C in 56 cases.
Type C′ in 40 cases.
Type D in 29 cases.
Type D′ in three cases.
Type E in 13 cases.
Type F in one case.

It is thus seen that type C is the most common one, then in decreasing order, C′, A, D, E, B, B′, F.

Type A was most commonly found in smears made directly from the swab. Variation of type was often observed, that is to say, in specimens made directly from the swab certain types were present while in the cultures, different ones were observed.

Not only the virulence of the bacilli but also the quality of the medium and the number of days that elapse before the swab is examined and planted may have some influence on the types present.

I shall endeavor to keep a record of the different types during this year and ascertain, if possible, the virulence of the most common ones.

INTERMITTENT CLAUDICATION AND ANALOGOUS PHENOMENA (ANGINA PECTORIS, ETC.).[1]

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IN presenting this paper to you I am actuated by two motives—one the report of a rather infrequent symptom group that occasionally attends a disease of great frequency, general arteriosclerosis, but more often exists independent of it, the other—to dilate in some detail upon the more recent inquiries into the causation of stenocardiac attacks of which angina pectoris is the best known type. I desire first to present my notes of a case of intermittent claudication, and I trust this unusual condition will prove to be not without some interest.

Personal History.—The patient is a retired merchant. Until the age of sixty he was active in business and in fair health. Ever since a young lad he has complained of a weak stomach, but with this exception he had no illness that may have a bearing upon his present condition. Syphilis and excessive alcoholic indulgence are denied, though I have learned from other sources that he was formerly by no means moderate in the use of spirits. The gastric disturbance has been a source of constant complaint, and is limited to a feeling of distress after eating.

He has been an invalid for several years past, has traveled extensively in search of health, has been to various spas; but his condition remains, with slight exception, stationary, and at present differs but little from that obtaining for several years. The whole picture as presented now has come in so gradual a sequence that it will be quite sufficient to detail existing symptoms.

Status Presens.—The patient easily shows his age of seventy-three years. He is sallow, his skin has a pasty, yellowish hue, and while he seems at times rather listless, his eyes brighten in conversation and his mind becomes alert and active; his temperament—so far as opportunity has been afforded me to judge of it—is a rather happy one; he constantly recalls interesting happenings of his early years, is pleased with happy reminiscences, and enjoys the telling of jokes and humorous events of his life. At the same time he is rather outspoken and severe with those attending him, though this—I am told—was his habit when in business also. His mind has always been clear, and his memory most excellent, nor has this undergone any marked deterioration. Subjectively he complains of gastric discomfort and a rather harassing cough, with some expectoration. In addition he finds walking difficult; his limbs feel heavy, and a dragging of the legs is apparent; there is at times a considerable degree of weakness in the lower extremities, and it frequently happens that, when rising from a sitting posture, he is compelled to take hold of some object or person to prevent his falling. This latter symptom, however, is due—not so much to weakness of the limbs as to a dizziness that comes over him, and frequently his body will sway perceptibly before he finds a safe and firm foothold upon the floor. Then he can usually proceed, though never without the support of a cane. It happens, too, and this is the symptom to which I desire to call attention, that, while walking with comparative ease for a few minutes—he suddenly experiences a sense of weight and a cramp-like pain in his legs; then they give way underneath him and he falls to the pavement, helpless. After a few moments' rest he can rise and proceed. He rarely has more than one such paroxysm, because—knowing his infirmity—he never ventures far from home.

Objectively we find of interest the following conditions: a waxy, sallow complexion and poor muscular development; hearing is dulled; sight is good with the aid of spectacles, bilateral arcus senilis is prominent. Signs of chronic bronchitis with emphysema are present, the latter not very pronounced. The cranial nerves are intact with the exception of the right hypoglossal; the tongue occasionally deviates perceptibly to the left, and is at times complained of as being heavy and unwieldy; this, associated with a weakness of the arms and legs predominating on the left side, indicates the existence of a cerebral lesion, though

[1] Read at the Fifty-eighth Annual Meeting of the State Medical Society of Wisconsin, Milwaukee, June 23, 1904.

in the absence of a seizure of any kind, neither patient nor attendants were aware that a hemiparesis existed. Tactile, thermal and localization sense are normal. The knee reflexes are reduced on both sides, ankle elonus is absent, skin reflex normal, pupillary reflexes sluggish. Coordination is fairly well preserved, Romberg symptom absent. The viscera show the following changes: The heart is somewhat enlarged generally, the mitral systolic sound is indistinct, occasionally lengthening out into a sort of murmur, but the diastolic basal sounds are not appreciably accentuated. The lungs give evidence of a chronic bronchitis with emphysema. The liver is of normal size, spleen likewise. The urine is said to have contained hyaline casts and albumen, but is now free from either of these constituents. The daily quantity passed averages 60 ounces or more and has a low specific gravity.

The radial arteries are hardly more resistant than normal. Pulsation is present in the dorsalis pedis artery, but *absent in both posterior tibials at the internal malleolus.*

The whole clinical picture, with widespread lesions, consisting principally of cerebral symptoms—general and local—and involvement of the heart, kidneys, and to a slight degree the superficial vessels, allows of but one interpretation—a general arterio-sclerosis, or arteriocapillary fibrosis. The one symptom, however, to which our attention is called, is the cramp and loss of power in the lower limbs, coming on without premonition and of brief duration: this is known technically as "Intermittent Claudication" (limping).

History of Disease.—Intermittent claudication had been recognized as an affection of horses many years previous to its recognition in man. A French veterinarian, Bouley the elder, gave the name in 1831 to a peculiar disease occurring in horses, found to be due to an obliterating endarteritis of the crural vessels. An animal, so affected, trots upon demand, but in about fifteen to twenty minutes it limps, stops, and is unable to move, its legs are spread apart, and, though urged on, it falls to the ground, rigid and helpless, and in apparent agony. Upon rising it continues to trot for a brief distance, when a similar paroxysm again throws it to the ground.

To Charcot[1] belongs the credit of first placing this symptom-group as it occurs in man upon a recognized clinical basis. In a clinical lecture on "Intermittent Claudication and Diabetes"[2] delivered at the Saltpêtrière in 1887 (Leçons du Mardi à la Saltpêtrière) Charcot reminisces as follows: "One day—a long time ago—in 1855 or 1856, I was then an interne in the service of Rayer—one of the patients told me that he could not walk longer than a quarter of an hour without being taken with a cramp in his lower extremities; he would rest, then begin to walk, and the cramps would recur. This man died, and I had an opportunity to make an autopsy and account for this bizarre symptomatology of which I had never before heard mention—which shows that one does not appreciate thoroughly all that one sees, for certainly these cases are not very rare; I know to-day of a number of them. The fact is that at the autopsy I found—curiously enough—a bullet encysted in the neighborhood of the iliac artery, which bullet our patient had received at the siege of Alger, in which he had taken part. You see that was a long time ago, for he died at the age of fifty-six. He received the bullet in the back, and it was impossible to follow its course. I found it in the abdominal cavity; it had struck the iliac artery, causing a traumatic aneurism which had obliterated the artery in its lower part. Collateral circulation had been established, and the arterioles, which normally were very small, had become voluminous, and were of such a character that the blood flowed freely when the patient was in repose; but when—and here is the mechanism of intermittent claudication—the limbs were fatigued by walking, the quantity of blood distributed to them was insufficient, a relative ischemia setting in at the moment, this absence of blood causing numbness, cramps, and inability to continue walking."

It needs the clever observation of one whose watchful eye allows nothing to escape and whose analytical mind interprets logically, to call attention to a condition which, though uncommon, falls nevertheless within the experience of many a physician.

Literature.—Charcot found fault with physicians because of their apparent neglect of this affection. He remarks (in 1887): "Curiously enough, though my essay of 1856, presented to the Biological Society was written not in Chinese but in French—in good French at that—I I have not encountered a single physician who has taken notice of my observation." This was an unjust criticism, inasmuch as Leyden had in 1874 taken cognizance of Charcot's observation, and Erb in 1876. Sir Benjamin Brodie, in 1858, described the symptoms of intermittent claudication and referred to them as premonitory signs of senile gangrene. Aside from observations of Charcot's made at various times since his early report, there are a number of other references to this disease. A most exhaustive treatise on the subject has been written by Erb,[3] who reviews the history of cases reported, and cites *in extenso* the literature extant; his own personal observations in this report cover thirteen cases of which the salient points are detailed. But recently Erb[10] has published a record of 45 additional observations of this disease made since his first series of six years ago. Goldflam[4] reported six cases in 1895 and more recently[5] presented a study of 24 additional cases.

A number of others are reported from various foreign sources, making a grand total of 127, of which 120 are males.

American literature is apparently very meager,

for I have been able to collect but three cases, one each described by Riesman[6] and Gordon,[7] of Philadelphia, and Levy,[8] of Syracuse. Gordon's was not a case of pure intermittent claudication.

Symptomatology.—The development of the symptoms usually present may be briefly described as follows: paresthesias in the feet; then vasomotor disturbances, such as blueness, redness, pallor, or coldness of the feet; next the motor symptoms as described: walking becomes difficult, it is found impossible to proceed because of a rigidity or painful cramp in the legs; after a period of rest locomotion may be resumed, only to find the paroxysm returning after a brief time.

Although intermittent claudication is a characteristic and frequent symptom of arteritis—this being the pathological condition, as we will find—it may be absent entirely, and the arterial disease be manifested by pain arising spontaneously in a condition of rest, and independent of walking. This pain may be in the calf, along the sciatic nerve, in the sole or toes, or there may be but little pain and merely a sensation of weariness and formication. In such cases *the absence of the arterial pulse in the foot is the diagnostic feature.* The symptoms mentioned have frequently led to erroneous diagnoses of sciatica, neuralgia, and rheumatism. When the arteritis—which is a progressive disease and involves progressively larger areas—has advanced to a marked degree, there will be present—in addition to the typical symptoms—attacks of pain, even when the limbs are at rest. Occasionally the disease seems to arrive at a certain degree of severity and then remain stationary.

My patient has practically no pain while resting in bed, and enforced rest brought on by a severe attack of sciatica has put the other symptoms in abeyance. His condition is not progressing.

Objectively, some signs of disturbed circulation are usually present: superficial dilated veins, cyanosis, edema, cutaneous petechiæ, phleboliths, and phlebothromboses. The muscles are at times sensitive to pressure, atrophy may take place, and active fibrillary contractions are seen. But more important than these vasomotor and other disturbances is the circumstance that *pulsation of the dorsales pedis and tibiales posticæ is frequently either entirely absent, or can be appreciated with difficulty*, and the rigidity of these vessels can frequently be determined. Of the 24 cases reported by Goldflam, pulsation in both dorsales pedis arteries was absent in 13, on one side only in 10, while both were weak in but one case. Both tibiales posticæ were pulseless in seven, one artery only in eight, and in the remaining nine pulsation was present.

Of Erb's recently reported 45 cases, 30 were bilateral, 15 unilateral. Of the 30 bilateral cases, pulsation in all four pedal arteries was absent in 16 cases, three were absent in two cases, two in seven cases, and in only one case was the absence of pulsation in a single artery noted. In four typical cases all four arteries pulsated perceptibly. In 13 of the 15 unilateral cases, pulsation was absent in both anterior and posterior tibial arteries. In my case both dorsales pedis arteries pulsate, but the tibiales posticæ do not. These cases demonstrate the frequent association of this symptom with the disease under consideration, and serve to emphasize its diagnostic importance, more particularly when the unmistakable classical symptoms are not present. In 37 of Erb's second series of 45 cases other unmistakable signs of arteriosclerosis were in evidence.

While in most cases recorded the symptoms are bilateral, the disease has been encountered affecting but one limb. In these cases the dorsalis pedis and posterior tibial arteries pulsated in but one limb, but where the symptoms occurred symmetrically pulsation was either absent or slight. Because of the fact that the limping is not a constant feature of all cases, Erb suggests a name based upon the clinical and pathological features, "Dysbasia Intermittens Angiosclerotica."

Analogous Phenomena.—Weber[9] describes the case of a man whose left common iliac artery was obliterated by accident, and who suffered from muscular cramps in the left leg, but unaccompanied by other features of intermittent claudication.

Nothnagel has described analogous phenomena of the upper extremity.

Charcot called attention to the similarity of the symptoms to those of angina pectoris in the sclerotic occlusion of the coronary arteries; in fact, one of the cases of intermittent claudication coming under Charcot's observation, died of angina.

There are cases of milder symptomatology, as we know, due to sclerosis of the coronaries or the first portion of the ascending aorta, in which the symptoms are about as follows: the patient,—while walking—is suddenly taken with a pain beneath the sternum, radiating to the epigastrium and into the back, associated with great anxiety. After a rest of a few minutes he can proceed, though there is danger of a repetition upon exertion. A hearty meal may also bring on an attack. These are cases of "angina d'effort" (angina following effort)—with a true claudication of the heart.

J. Schnitzler[12] reports a symptom-complex which he terms "Intermittent Ischemic Dysperitalsis"—an intermittent painful peristalsis on an ischemic basis. The symptoms in his case were those of excruciatingly severe intestinal cramp-like pain, with distention, and without any symptom of obstruction. The symptoms were found to be due to thrombosis of the superior mesenteric artery, the result of arteriosclerosis. He draws a parallel between this condition and that of intermittent claudication. Others have since then made similar observations.

Breuer[13] reports two such cases. It is probable that the severe attacks of colic that have been

recorded by various observers as symptoms of thrombosis of the intestinal arteries, are in reality to be ascribed to this "ischemic dysperistalsis"—to use Schnitzler's term. Breuer calls attention to the fact that in the reported cases of aneurism of the mesenteric vessels, and more particularly in the cases of aneurism of the aorta in the neighborhood of the superior mesenteric artery, there were noted long and severe colic-like intestinal pains. Collateral circulation will—in all such cases—make these attacks infrequent for a time, but as soon as occlusion of the vessel is entirely or almost established, the symptoms ensue with severity and persistency. We might bear in mind that the pains of syphilitic arteritis are of vascular origin.

There are doubtless other cases of arteriosclerotic pain that fall in the same category. Breuer cites the case of a patient who suffered severely from renal colic, supposed to be due either to a tumor or hemorrhagic infarct. Postmortem examination revealed neither tumor nor signs of an infarct, but a marked sclerosis of the renal arteries. Kaufmann and Pauli[14] made a careful study of stenocardiac pains in the epigastrium, and conclude that these cramp-like spasms are not primarily due to a relative ischemia of the part, but that an angiospasm of the partly sclerosed vessel determined the ischemia and pain.

Ortner[15] cites a case of angiosclerosis of the abdominal vessels (abdominal aorta, cœlic axis and mesenteric arteries) with symptoms of angiospasm—an intermittent claudication of the intestines.

Wagenmann (cited by Ortner) reports having observed with the ophthalmoscope an interesting phenomenon in a patient who had marked general arteriosclerosis. The patient complained of a periodic clouding of vision, and during such an attack Wagenmann distinctly observed a spasm of the retinal vessels. This may with justice be termed an intermittent claudication of the retina.

Having in mind that claudication seems, thus, to involve various organs, Ortner suggests that Erb's term "dysbasia" (difficult walking) I. A. be modified to "dyspragia" (difficult functionating) intermittent angiosclerotica: we may thus speak of a dyspragia of the extremities, heart brain, retina, kidneys and bowel.

Causation of Symptoms.—Charcot's explanation—and this applies to the analogous phenomena just stated as well—that when the limbs are at rest collateral circulation is well established, but when they are put to the exertion of walking, a temporary ischemia of the part followed by transient muscular spasm and paraplegia, sets in as a result of the sclerotic occlusion of the artery, is generally accepted.

This theory, however, that the arterial disease is the direct and sole cause of the pain and paresis in intermittent claudication as well as in angina pectoris—the symptoms being due to an ischemia of the muscles—a cry for food—is inadequate to satisfactorily explain these phenomena. This is possibly best understood if we call to mind the well known fact that the cases of angina pectoris are numerous in which there is but slight sclerosis of the coronary vessels, and vice versa—that stenosis of the coronary artery has been found in the case of persons never known to have suffered from angina pectoris.

In a number of autopsies made upon patients suffering from stenocardiac epigastric pains, Houchard (quoted by Kaufmann and Pauli[13]) found a condition of sclerosis but no anatomical narrowing of the blood vessels, and therefore, he too argued that an ischemia on this basis could hardly be a prerequisite of these attacks.

Weber[9] too—because of reasons mentioned—namely—that there is no constant interdependence of coronary sclerosis and angina pectoris—is disinclined to place credence in Charcot's explanation. He maintains "that muscular cramp does not take any part in angina pectoris or in the phenomena preceding senile gangrene in an extremity, but that cramp is likely to occur in any muscle where an accumulation of waste products takes place, whether this accumulation be caused in healthy animals by rapid catabolism due to excessive exercise (cramps following overexertion, as in athletes), or by insufficient removal of waste products in cases of disease due to stenosis of the main arteries and consequent diminution of the blood stream through the affected part."

We are indebted to Nothnagel for a solution that has an air of great plausibility, seems to be well substantiated by facts, and has of late received generous recognition. Nothnagel claims that the symptoms of painful spasm are of arterial origin, that the developing ischemia is due to an arterial spasm, the result of an effort on the part of a diseased artery to supply an increased quantity of blood, and that the pain is in reality a blood-vessel pain. Such an angio-spasm would—though the organic occlusion of the vessel be but partial—cause an absolute ischemia of the part nourished, and, as a consequence of this, severe symptoms follow. It is probable, too, that this angiospasm may be transmitted from its seat of origin to other vessels in continuity with it, and thus cause very extensive spasm, pain and ischemia. This is seen in cases of very sudden death in attacks of angina pectoris when but a small embolus or thrombus is lodged in a coronary artery, and is evidenced too by the radiation of the stenocardiac pain from the precordium into the vessels of the arm.

These considerations shed light upon the probable causation of this painful spasm—intermittent claudication, that is—arteritis plus arterial spasm, but of even greater interest is the light shed upon the possible causation of the symptoms of that very frequent affection, angina pectoris; certain it is that the cases of sudden death in which but a slight coronary sclerosis is found are numerous, and these, I believe, are best ex-

plained upon Nothnagel's theory of angiospasm which produces a relative occlusion of the vessels, and which, because of its transmissibility by continuity, may account for the radiation of the pain into the arm.

Complications: Gangrene and Diabetes.—The essential morbid changes that produce the symptom-complex intermittent claudication, being—as has been stated—a more or less complete obliterating endarteritis involving the distal arteries of the foot and leg, and frequently the femorals and iliacs as well, it occasions no surprise to learn that gangrene of the affected extremity occasionally supervenes. This has been frequently encountered, and appreciation of this danger is nowhere better expressed than in Charcot's words: "Each time that I saw these symptoms (intermittent claudication) appear, it has seemed to me that I could see beginning the second act of a drama of which one could, as time passed on, detect the evolution." Of Goldflam's 24 cases, seven terminated in gangrene. In these cases the paroxysms were unusually painful. I. H. Levy also cites a case with the same outcome. Charcot and others have called attention to the occasional association of symptoms of intermittent claudication with diabetes. When one recalls the frequency of gangrene—the result of the arterial obliteration—in the latter affection, the possibility of the development of this peculiar symptom-group is self-evident.

Etiology.—Etiology, the ready inference is justified that whatever causes act in producing arteriosclerosis elsewhere obtain here, too, and so we may include as factors in the causation of this affection: alcoholism, gout, lead, syphilis, tobacco, and exposure, the last three being the prominent factors in Erb's cases, special stress being laid upon tobacco abuse as a cause.

Erb asks the pertinent question (but leaves it unanswered): why—if arteriosclerosis is so very common—is intermittent claudication so relatively rare, and what is it that determines the development in these cases—as points or predilection—of this sclerosis in the limbs? In one of Erb's cases there was no distinct evidence of sclerosis of the radials, temporals, carotids or heart. This applies in a measure to the case I report, though it is quite evident from the history and symptoms that the vessels of the internal viscera are affected.

Diagnosis.—There are two diseases with which intermittent claudication may at times be counfounded, these being erythromelalgia and Raynaud's disease. Pathologically they are very similar, for all are due in part at any rate to vascular changes, and a thickened intima is constantly found. The difficulty of distinguishing these three diseases is heightened by the fact that their symptoms are often very similar, and because combinations of the affections apparently exist (Cassirer[10]). The case reported by I. H. Levy had vasomotor symptoms suggesting an erythromelalgia.

Mitchell and Spiller,[11] in their report upon the miscroscopical examination of the tissues of an amputated toe from a case of erythromelalgia, report finding, in addition to degeneration of the nerves, marked proliferation of the intima and media of the vessels, and in some sections almost an occlusion of their lumen.

The most prominent symptoms that differentiate intermittent claudication in its pure form from other affections, are the intermittent character of the paroxysms—absent when the patient is at rest, and produced only by walking—and the absence of pulsation in one or more of the distal arteries.

The diagnostic importance of the latter symptom is well demonstrated by Erb. Examinations made upon 700 individuals who were presumably not suffering from grave heart or vascular disease, or such conditions as edema, eczema or elephantiasis that would make palpation difficult, indicate that the pulsation of the dorsalis pedis and posterior tibial arteries can normally be felt in 99 per cent. of all cases. It does not follow, however, that the absence of pulsation results in the symptoms mentioned, because appreciation of the pulsation may be impossible, and this be due only to a rigid and not entirely occluded vessel; again, even though it be occluded, an established collateral circulation may prevent further symptoms. Furthermore, one of Erb's cases teaches him that the symptom-group—intermittent claudication—may be present without the absence of pulsation in any one of the four vessels.

Treatment.—Intermittent claudication is not a disease *sui generis,* but merely a peculiar clinical manifestation of arteriosclerosis involving the vessels of the lower extremities. Appreciating its pathology, an early recognition of the import of the symptoms is made manifest, in order to anticipate and prevent, if possible, complete arterial obliteration, and foretell a probable gangrene consequent upon such occlusion. That the disease has been insufficiently recognized before such a complication set in is undisputed.

The measure of comparative safety lies in the establishment of a satisfactory collateral circulation, or even re-establishing a channel in the occluded vessels—in order to improve the nourishment of the limb. Therefore bodily rest with warmth and moisture is an all-important element. If a suspected or probable cause is known, this must be corrected at once. The diet must be attended to and the personal hygiene regulated.

The use of alcohol and tobacco must be interdicted, and all excesses and abuses avoided. Hydropathy, massage and electricity seem to have been of service in some cases. Among drugs the iodides, vasodilators and heart tonics are indicated. Goldflam found the iodides of questionable value. Theobromine in the shape of diuretin has of late been advocated as relaxing vasomotor spasm, and would theoretically be indicated. In the main, however, one must rely on

a therapeusis of general character, not medicinal. When walking is to be resumed it is to be done with the utmost caution to avoid undue fatigue.

Both Erb and Goldflam report cases that were relieved of all symptoms, some in which pulsation returned in the crural vessels, and other cases that were markedly ameliorated. In the case reported above faint pulsation can now be felt in the right posterior tibial.

CONCLUSIONS.

The study of the cases of intermittent claudication thus far recorded justify the formulation of the following conclusions:

1. Intermittent claudication is far more frequent symptom-complex than generally recognized.

2. It is doubtless frequently and freely confounded with sciatica, neuralgia and rheumatism.

3. Careful and detailed inquiry into the symptoms which usually come on while walking and are absent when at rest, together with their intermittency should lead to a suspicion of the diagnosis; this will be made absolute by finding that

4. Pulsation is absent in one or more distal arteries (dorsalis pedis and tibialis posticus) of one or both legs.

5. The pain is of vascular origin and due to an arteritis plus—in many cases—angiospasm of the affected vessel.

6. The various internal viscera may suffer from such an angiospasm when their vessels are sclerosed, the most prominent prototype being the heart in the common condition, angina pectoris.

7. Total occlusion of the vessels, as occasionally found in intermittent claudication, may lead to gangrene of an extremity.

8. Early recognition is essential, in order, by appropriate treatment, to prevent this dire and frequent complication.

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New York Polyclinic. Emeritus Professor H. Newton Heineman will deliver a lecture at the New York Polyclinic Medical School and Hospital on Monday, December 5, 2.30 P.M., through the courtesy of Professor Manges. The subject of this lecture is to be "The Nauheim Treatment of Heart Disease."

MISOCAINIA IN MEDICINE.

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Lombroso has called the deep rooted inclination of mankind to combat new ideas "misoneismus." For this barbarous term let us substitute a correct name: "misocainia."

In medicine, as in other sciences, many new things are brought up from time to time which, later on, are recognized as new errors; this explains why new ideas are received with caution, even with suspicion; but this is nothing morbid and cannot rightly be called misocainia. We can speak of misocainia only when the motives of the opposition against new ideas are prejudice, selfishness, and indolence—the archenemies of all progress—and we may classify misocainia as phrenitis *sui generis* in cases in which it develops to such a degree that men of science, of exalted position, lose the sense of truth and honor and degrade themselves by the employment of unworthy means in order to suppress a new idea or intrigue against and injure those who have promulgated a new truth.

Of this form of phrenitis examples exist in the history of medicine.

John Kanold, in the year 1708, wrote: "It is to be hoped that at this time no one who has common sense will deny that the *historia morborum* is the most important and most valued support of the whole of medicine, because, by thorough knowledge of this history, we learn to arrive at the true pathologico-etiologic conception and consequently we find the necessary and reliable *indicationes curativæ*.

Nothing in the world has caused more animosity, more persecution, than the promulgation of new religious doctrines, but the cruelties originating in religious fanaticism are more easily explained than the rage of men of science against new ideas.

While the ecclesiastical courts of several countries had hundreds of thousands tortured, burnt at the stake; while for centuries, even in America, unfortunate women, supposed to be witches, were drowned, there is no case known in which a physician, for the promulgation of a new scientific truth, has been tortured or burnt at the stake.

The fact is that a physician, Servatus, the discoverer of the pulmonic circulation, a forerunner of Harvey, was burnt at the stake on October 27, 1553, at the instigation of Calvin. His agony was prolonged in a most cruel manner by keeping the fire low. After he had been for half an hour on the burning stake the unfortunate man asked to have more wood applied to the fire, that death at last might relieve him. But Servatus did not die a martyr to science; he was the victim of religious persecution, because he had expressed an opinion about the holy Trinity which differed from Calvin's teaching.

The case of Galileo may be mentioned here, as it offers an opportunity to expose one of the most pertinacious historical lies. The story that Ga-

lileo had been tortured is found in school books, and it is difficult to eradicate it.

Galileo had studied medicine; he was a physician, although he devoted himself to study of mathematics, astronomy, and the natural sciences. He made many enemies by mixing quite unnecessarily theological controversies with his astronomical discoveries. It is true that he was brought before the tribunal of the Inquisition, but the legend of his torture is an invention. Whatever accusations against the clergy for their intolerance may be justified, towards Galileo they acted rather generously.

In fact, there is no case known of a physician being tortured or burnt at the stake on account of a scientific discovery.

Johann Baptista van Helmont, born in Brussels, in the year 1578, one of the greatest scholars among the physicians of his time, the discoverer of carbonic acid, wrote against a certain sympathetic remedy. For this he was taken before the Archbishop of Mecheln and punished with two years' imprisonment, because he had denied the healing power of religion. His colleagues called him all sorts of names because he was opposed to blood-letting, the universal remedy for almost all diseases at those times. Gui Patin wrote the following necrology: "Van Helmont étoit un méchant pendard flamand, qui est mort enragé depuis quelques mois. Il n'a jamais rien fait qui vaille. J'ai vu tout ce qu'il a fait. Cet homme ne meditoit qu'une medicine toute de secrets chimiques et empiriques, et pour la renverser plus vite, il l'inscrivoit fort contre la saignée, faute de laquelle pourtant il est mort frénétique."

During the period of the scholastics natural science was subordinated to, was the slave of, theology. The new fetters which Protestant orthodoxy wound around natural science were as tight as the old ones. Dogmata of the church exerted a great power.

In the year 1640 Juan del Vego introduced Calisaya bark into Europe. The new remedy became at once the object of much dispute. Because the Jesuits recommended and praised it, it was called *pulvis Jesuitarum*, and this name was enough to make it disliked among the Protestants. Physicians were against it because it cured intermittent fever too quickly, depriving them of a certain amount of income.

Physicians were too humane to manifest their intolerance by fire, as did the church; they went to work in a more subtle way, but they were cruel all the same, and after all they imitated to some extent the example set by the church. The object of the inquisition was to exterminate heresy, but as the fine humoristic expression was "without bloodshed," the heretics were burnt.

There were neither bodily torture nor stake for men of science who promulgated a new truth that was apt to harm the prestige of the authorities of the day; these men of science were tormented until they became ripe for the phrenocomion The misocainistai of the medical profession were like the clergy, "no blood shed;" they only differed in so far as they applied no bodily torture and did not burn their victims at the stake; they simply drove them to insanity.

The history of Harvey's discovery is too well known to need recapitulation here.

Harvey's book on the circulation of the blood is the earliest and most brilliant fruit of the method, founded by Bacon, of exact research in natural sciences. In regard to time it is one of the first products and in regard to value the greatest product of English medical literature, written throughout in a genuine scientific spirit.

Quite recently there appeared an editorial in one of our medical journals, according to which Harvey was not at all the discoverer of the circulation of the blood, and his book, this immortal work of Harvey, was called "verbose and somewhat muddled."

Es liebt die Welt das Strahlende zu schwärzen,
Und das Erhabene in den Staub zu ziehn.

Harvey had many opponents, but he did not, with one exception, answer their attacks; being thoroughly convinced of the truth of his teachings, he left it to time that he should be understood, and yet in the evening of his life he had the satisfaction of seeing his teachings adopted.

What the masses thought of Harvey's exertions we learn from the fact that after the publication of his work on the circulation his practice fell off; he was considered of diseased mind. The excitement Harvey's discovery caused in medical circles, and among the educated in general, was most extraordinary; epecially were physicians disgusted with a new thing which they considered of no value for the practice.

Würtz, who was far ahead of his time, must also have met with misocainia. He writes: "All sensible surgeons will excuse this, my writing, and easily admit that among the ancients there must have existed much ignorance and great stupidity as well as in this, our own time."

Leopold Auenbrugger discovered, in the year 1754, that the different kinds of sounds heard on percussion of the thorax, furnished an aid to judge the condition of the organs of respiration. His immortal work "Inventum novum ex percussione thoraci humani ut signo abstrusos interni pectoris morbos detegenti" appeared in the year 1761, simultaneously with the work of Morgagni, by which a new era of pathological anatomy was inaugurated.

Percussion shared in full measure the fate of most of the great discoveries. Of the few who took notice some treated it with indifference, some, and among them especially the Vienna physicians, with decided animosity, with disdain and ridicule, or with senseless contradictions. Haller was the first who openly expressed himself in its favor. In his review of Auenbrugger's book he said: "All such propositions, although they need not at once be accepted, merit to be listened to with respect." To Ludwig, of Leipzig, is due the credit of having been the first to recognize,

in 1763, the importance of Auenbrugger's discovery to its fullest extent; he spoke of percussion as the light which should banish the darkness that covered the diseases of the thoracic cavity.

It was reserved for mioscainia in the nineteenth century to drive two of the great investigators in medicine into the lunatic asylum.

Julius Robert von Mayer is the originator of the doctrine of the conservation of energy. In different publications he demonstrated the law of the indestructability of force. For the first of these he had to pay the expenses of printing, as no publisher would assume the risk. He was the first to grasp the conception of the equivalence of exertion and heat; he enunciated this principle with clear distinction; applied it, with great acumen to astronomy and to human physiology, furnishing conclusive evidence for his teachings. His labors did not meet with the approval they so richly merited, and the contradictions, the attacks he had to suffer, drove him to insanity. From 1852 to 1854 he was an inmate of the lunatic asylum of Göppingen, where he was treated, according to the old fashion, with locked chair and straight jacket. Dismissed as cured in 1854, he gradually had the satisfaction of seeing that his discovery was appreciated to its full value in all scientific circles.

Ignaz Philipp Semmelweis was born in Ofen, July 1, 1818. At nineteen years of age he began the study of medicine and graduated in Vienna in 1844. At first he devoted himself to general medicine under the inspiring influence of Skoda. In 1846 he became assistant in the first obstetrical clinic of Professor Klein. In this clinic there had been for many years an enormous mortality from puerperal fever reaching in one year so high a total as 31.3 per cent.

These disastrous conditions worried Semmelweis day and night. At that time there existed an abundance of theories to account for them, the peculiarity of which we shall understand when we consider the state of medicine in general at that period. Among the supposed or named causes was the transposition of the milk or the rising of the milk to the head, or milk metastasis; some accused cosmic or telluric influences, without assigning any reasonable definition of their meaning. Some explanation, however, had to be constructed in the absence of any definite ideas.

In the year 1847, the pathologist Kolletschka died. At post-mortem examination he had received a punctural wound of the finger and had succumbed to the pyemia which followed this accident. The details of this case of pyemia after wound disease corresponded exactly with all that Semmelweis had observed at necropsias of women who had died of puerperal fever.

As happens with the true genius, he found as quick as lightning the explanation which had been sought in vain for a long time: puerperal fever is caused by wound infection, it is pyemia proceeding from the wounded inner surface of the uterus. Not the wound itself but its infection is the external cause. Physicians and students, in the course of examination, by their unclean or insufficiently cleansed hands, transmit the noxa to the healthy but wounded woman. This seemed to him in accord with the observation that decomposing organic matter may cause decomposition and putrid infection in the living organism. He demanded that the hands should be disinfected with chlorate of lime water. This is in the main what he communicated as the result of his first researches. The greatest discovery in obstetrics, which has also become a far-reaching blessing to surgery, is connected with the name of Ignaz Philipp Semmelweis.

It is true that Semmelweis had forerunners; in the year 1831 Cruveilhier called women wounded while in the puerperium, and thought it possible that puerperal infection might proceed from their wounds. But how little impression this had made can be shown by the fact that the Academy of Medicine of Paris pronounced itself decidedly against Semmelweis in the year 1851, and again in 1858. Eisenmann and Henle, both pioneers of the parasitic theory of infection diseases and both too little appreciated, as also Denman, must, next to Cruveilhier, be named as real forerunners of Semmelweis. It is remarkable that in the many publications on Semmelweis which appeared in Germany, especially during the eighth decade of the nineteenth century, the American, Oliver Wendell Holmes, is not mentioned. Holmes had spoken on the etiology of puerperal fever in a manner similar to that of Semmelweis before a medical society, in April, 1843, and had suffered, before Semmelweis, the most violent attacks by the authorities of his day. His discovery and the injustice done to him have been described by S. Baruch. His history is so well known by us that I need not enter into details.

But even the forerunners had, as Semmelweis remarked, recognized only a part of the truth, not the whole truth. The revelation of this latter was reserved to Semmelweis. The nearest to him was undoubtedly our Oliver Wendell Holmes.

As a result of observing the precautions which Semmelweis thought necessary, the mortality in the first clinic became reduced to 3.08 per cent.

Very soon Semmelweis found that cadaveric poison (ptomain) was not the only noxa producing puerperal fever, but that, in general, ichor from living organisms or air impregnated with ichorous particles caused infection. To him the decomposed organic substances were the carriers of infection.

The misocainistai accuse the discoverers of a new truth of having said things of which in reality they never thought. This feature was noticed when Niemeyer's book appeared in an English translation in 1870. Long after Semmelweis had said that cadaveric poison was not the only carrier of puerperal infection, his opponents, Scanzoni, Braun, Späth, Breisky and others, continued to accuse him of having spoken

of no other means of infection, and they gave him the nickname of the "cadaver apostle," and said that he was a very one-sided physician whose results were of the most meager significance. Semmelweis, in 1848, improved his method, which at first consisted solely in disinfection of the hands, in so far as that he insisted that not only the hands of the examiner but also the instruments and the dressing material, should be disinfected beforehand, and that patients with puerperal fever should be separated from those who had not been infected.

In this year, when strict and general disinfection was carried out, the mortality from puerperal fever in the first clinic sank still lower namely, down to 1.27 per cent., notwithstanding that examinations continued to be made by students.

Now, for the first time, Semmelweis came before the profession, speaking to the Vienna physicians, who were well aware of the former fearful condition, of his results.

One would have expected that when Semmelweis placed these plain figures before them and explained his views with great clearness and simplicity, all would have applauded him.

It is true some of the best men, Hebra, Haller, Skoda and Rokitansky, coincided with him without hesitation or reserve, but the representatives of his specialty, the obstetricians (with the praiseworthy exception of Michaelis, of Kiel) and especially his superior, Klein, opposed him, and took decided part against him.

In the oration of Ferdinand Hüppe, at the dedication of the Semmelweis monument before the Eighth International Congress for Hygiene and Demography, at Budapest, September 2, 1894, of which oration I have availed myself to some extent, he says: "Egoism, jealousy, fear of humiliation in view of the former miserable conditions, the dislike to abandon some nonsense to which they had become attached, the necessity of having to acknowledge their own gross mistakes, all these things manifested themselves by the actions of an omnipotent caste of bonzes toward the genius."

This was misocainia, that form of misocainia which borders on infamy. It is a distinct form of phrenitis.

At that time Semmelweis applied for a professorship: his enemies, however, frustrated his plans in this direction. The leading men in obstetrics in those days, Kiwisch, Scanzoni, Seyfert, Hammernick, had formed a conspiracy against Semmelweis.

But after all, a truth, new or old, cannot be suppressed without great exertions. In Vienna other men, Chiari, Helm, Arneth, stood up for Semmelweis, and in the year 1850 it seemed as if he had been victorious in Vienna. But this did not suit Klein and his partisans. They agitated to have him debarred by the States Ministry, and they succeeded. Semmelweis could find no place in Vienna. Deeply pained by such ingratitude he left and went to his native city, Budapest.

The want of animation, the obligation to care for the daily necessities, made him silent, and his silence caused his friends to halt in their zeal and their agitation for his cause.

His enemies, however, remained active, and the cities of Vienna and Prague secured for themselves the melancholy renown of having successfully combated the greatest and most beneficial discovery in obstetrics.

Thus the universities of Germany, and especially Vienna and Prague, were eager to suppress, by means of detestable star chamber practices, the most genial obstetrician in history.

At last, in the year 1855, the great investigator was honored by the Hungarian Government according to his merits. Without any step on his part to secure the position, he was made professor of obstetrics at the university of his native city. Here he enjoyed some years of happiness. A professorship at the university of Zürich was offered but was declined by him.

Scanzoni, Braun, and Späth continued to defame Semmelweis. Again and again they accused him of having spoken of the cadaver poison as the only carrier of puerperal infection. It is most remarkable how the misrepresentations and errors of Scanzoni are long-lived, most persistent in literature and tradition. As late as 1870, physicians of Berlin spoke of Semmelweis as the cadaver apostle, and even at this present day there are some, who have read only one part of the literature, who say Semmelweis had not been appreciated in lifetime because he had persisted in attributing puerperal infection solely to cadaveric poison. It is the same case with Scanzoni's error about the danger of carbonic acid gas inflation. It seems impossible to eradicate the errors of Scanzoni.

The moral deficiencies of his adversaries—misocainia sometimes suspends morals—were attacked by Semmelweis in a severe manner.

The open letters which he addressed, during the years 1861 and 1862, after the publication of his book on the etiology and prophylaxis of puerperal fever, to several prominent obstetricians and to all the professors of obstetrics who refused to grant him a hearing, and whom he called murderers, are well known. It cannot be denied that the tenor of these letters far outsteps the customary bounds of restraint, but no reproach on this account is due from his detractors to the man whom they had so greatly hurt. The tenor of his indignation corresponds with the baseness of the character of his opponents. Their celebrated open letters serve to show how bitterly he had been attacked and what tortures he must have endured.

"The deplorable conduct of his opponents" says Hüppe in his oration, "is the more inconceivable, as many among them had accomplished original work of lasting value in other branches of obstetrics, so that there existed no danger of the lessening of their fame." The explanation is that they were afflicted with intractable misocainia.

In the year 1861, Semmelweis had collected all his writings in his work on "The Etiology, Conception and Prophylaxis of Puerperal Fever." This work is one of the real classics of medical literature.

Completed in some details, with the addition of statistical evidences, but without any essential changes, he gives the views already presented in 1847 and 1848.

In accordance with his ideas in regard to etiology he demands in case of autoinfection all that we now call "antisepsis," in all other cases on the part of the operator cleanliness and disinfection of the hands, the instruments, the dressing material, the clothing, that is, all that we now call "asepsis."

This work had at first, thanks to the conspiracy of his enemies, almost no success. Scanzoni, Braun, Späth, Breisky and others, continued to call him the cadaver apostle. Only Lange, of Heidelberg, Kugelmann, of Hanover (the latter in writing to Semmelweis expressed "the holy joy" he had experienced when reading the book and calls Semmelweis a second Jenner), Hirschler and Markusovsky, of Pesth, stood up firmly for him, while on the occasion of the Thirty-sixth Congress on Natural Sciences, at Speyer, not only the obstetricians present, with the exception of Lange, but also Virchow were against him.

One of the most highly praised and most instructive books in medical literature is the work of the great surgeon Pirogoff, on the errors he committed in his surgical practice. Indeed we may learn as well from the errors of great men as from their correct ideas. Virchow's error teaches us not to trust too much to authority. However highly we esteem Virchow, we cannot omit speaking of his mistakes when writing medical history.

In the year 1864, the Bohemian parliament wished to hear the opinion of experts on puerperal fever, and lying-in institution buildings. Oppolzer, Rokitansky, Skoda, Virchow, Lange, Schwarz, Heckner, and Löschner were the experts selected. Oppolzer, Rokitansky, Skoda and Lange expressed themselves in accordance with the principles of Semmelweis. Virchow's opinion read as follows: "The *main cause* of the rise, development and spread of puerperal fever, is an individual *predisposition* to diffuse and malignant forms of inflammation; puerperal fever can set in in consequence of this predisposition solely, *without any contagion*. Local specific infection, contagion, happens only when the epidemic is at a certain high stage and when the contagion is of a certain intensity. In individuals without predisposition the contagion may remain ineffective."

As late as the year 1874 Virchow, but very conditionally, pronounced himself in favor of the parasitic theory.

Of the pathologist-surgeons of that time, that is from 1860 to 1867, only Roser promulgated views which came near those expressed by Semmelweis, but they were also attacked by the leader in pathology, Virchow, and by his adherents, Billroth and Weber.

That the results could not be everywhere and at once favorable we can understand now, when we consider that the technics had to be learned first, and that it was only later on that bacteriology brought full clearness in the understanding of most details.

This is an excuse to be made for those opponents of Semmelweis who had honestly tried his method. Where such honesty is wanting, as in the cases of Braun and of Scanzoni, where the requests were executed with no good will and imperfectly, the unsatisfactory results and the return of epidemics are not to be wondered at. Misocainia will not allow any good results, any success to a new idea, and no means are too base to suppress the new idea.

It was not granted to Semmelweis to see the triumph of his teachings. He became more and more irritable, and when he had addressed lay people in the street, to whom he said that they were not prejudiced like the professors, and to whom he explained his theory, he was taken to the lunatic asylum, and there he died on August 13, 1865, in his forty-seventh year.

Twenty-nine years after his death, physicians from all parts of the world united in erecting a monument in his honor, to commemorate the services rendered by him to science and to mankind.

Misocainia, so long as it is not manifested in a dishonorable manner, is natural, but misocainia expressed in malevolent misrepresentations is phrenitis.

I have undertaken to call attention to the rôle misocainia has played in the history of medicine. I had neither time to enter deeply into the subject, nor was I prepared for such serious historical studies. I hope, however, that this little collection of examples will be of interest and will aid in giving light on a remarkable form of phrenitis, and that the knowledge of the facts enumerated will be of some usefulness.

A NEW CASE OF CHLOROMA WITH LEUCEMIA, WITH A STUDY OF CASES REPORTED SINCE 1893.

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AND
ALDRED SCOTT WARTHIN, M.D.,
OF ANN ARBOR, MICH.

(Continued from Page 1032.)

This conception of Kundrat seems difficult or even impossible to accept literally, on account of the numerous connecting links between it and the very diseases that Kundrat separated from it, and also because of the older and equally unsatisfactory use of the term lymphosarcoma.

Rosenblath emphasized the difficulty of classifying chloroma among lymphomata on account of the tendency of the latter to remain within the capsule of the gland and not form metastasis.

"In chloroma even the tumors of the orbit, which seem at first glance to act like lymphomata, are quite different. They have no capsule, and grow through fat, nerves, and muscles. The majority of the other larger tumors are closely united with the periosteum and grow diffusely." Clinically and microscopically he thought chloroma grows very differently from leucemic and pseudoleucemic lymphomata, but he recognized the intimate relationship between chloroma and leucemia, and admitted that the histologic structure differed from that of sarcoma.

Risel, who made the anatomic examination in one of Rosenblath's cases, agrees in general with the points I made in my first report against the sarcomatous nature of the process, and emphasizes the clinical and anatomic reasons for assigning it to the group of leucemia and pseudoleucemia, and with the histologic structure of lymphosarcoma or lymphoma. But he prefers the term chloroma as less likely to involve error. According to him one could suppose the disease began in the prevertebral lymph glands, or perhaps in the lymphatic tissue of the bone-marrow. He also admitted the possibility, in his own case, of an origin in old, caseated, retroperitoneal glands. He thought the blood condition was not sufficiently known to place the disease in a definite group of leucemic processes.

Dunlop, too, thinks that lymphosarcoma is perhaps the best term to apply to "the growths found in chloroma resembling on the one hand lymphomas in their structures, and sarcomas in the fact that they arise from the periosteum and that they spread by metastasis." This is of course somewhat different from the conception of lymphosarcoma held by some of the authors previously quoted, and not altogether in line with recent views on the pathology of sarcoma.

Gümbel described the tumors in his cases as lymphomatous, having many resemblances to bone-marrow. The cells were mononuclear large lymphocytes, like those in the blood and bone-marrow, lying in the scanty connective tissue, evidently that of the original tissue. The tumor was not circumscribed in any part, but spread out irregularly, accordingly to the denseness of adjacent tissue. The tumors were poorly vascularized, without evidences of newly-formed vessels. Admitting the resemblance of the tumor to sarcoma, he points out that chloroma is essentially limited by mechanical conditions as regards its spread, unlike the unlimited growths of sarcoma. Another point is the impossibility of finding a primary growth. Other points of difference are: The absence of giant cells, of bone formations, of characteristic circumscribed metastases in internal organs. The cells of the tumor he, too, thinks are the same kind as the majority of those in the blood, the bone-marrow, and the splenic pulp. "All the lymphoid tissue in the body was increased. In the bone-marrow the normal elements were lessened or absent, but the large lymphocytes much increased." This led him to place the primary seat in the bone-marrow. Moreover, the tumors first demonstrable clinically and apparently the oldest anatomically, are with rare exceptions near the skeletal system —*i.e.*, in tissue nearly related to bone-marrow. He considered the tumors as secondary formations, beginning probably in lymphadenoid tissue and growing out from there. "Inasmuch as chloroma remains separated from the lymph glands by their capsules, it is evident that the change in the glands is the expression of the general disease, that the tumor does not originate in them. The term lymphosarcoma is therefore not applicable." He notes the close resemblance that chloroma cases have to acute leucemia in their respective terminal stages.

Trevithick rejected the idea of sarcoma on account of the symmetry of the lesions, the relative position of the organs invaded, the irregularly disorderly disposition of the individual invading cells, and the marked absence of vascularization. He described the cells in the various tissues and found them identical. The bodies are irregularly polygonal, the nuclei large. In the lymphatic glands he found many vascular, presumably lymphatic, spaces, wherein the endothelium is evidently undergoing immense hyperplasia. These he thought had an important part in the morbid condition.

Hichens, on the other hand, who has a somewhat imperfect idea of my own reasons for objecting to the term sarcoma, thinks that the erosion of bone which occurs in some cases is suggestive of sarcoma—which of course might be said quite as truly of aneurism of the aorta—and suggests that lymphatic leucemia is a fluid sarcoma of the hematopoietic system and that chloroma is only another manifestation of the same disease characterized by solid deposits.

Sternberg considered the process a lymphosarcomatosis in the sense of Kundrat and Paltauf. His patient probably died early in the disease, before the process had spread beyond the lymph glands. He thinks there are certain relations between pseudoleucemia, leucemia, and lymphosarcoma, though the anatomic separation is possible. To him the difference depends on the presence or absence of heterotopy. The growths in the dura and periosteum he considered evidence of lymphosarcoma rather than lymphoma.

Klein and Steinhaus were the first to report a marked departure in the histology of chloroma. In films spread from the spleen, bone-marrow, and the green tumors, they found that most of the cells instead of being lymphocytes were neutrophile cells, mostly myelocytes. The rest were lymphocytes, or in the bone-marrow, these with eosinophiles and red corpuscles. Sections showed the same kind of cells. Accordingly, these authors would remove chloroma from the lymphosarcoma group and place it among the leucemias. The green color they would give a subordinate place among the characteristics of chloroma, and would lay most stress upon the

localization, the great aggressiveness, the tendency to infiltration, and the rapid course.

Weinberger says that in his case the anatomic diagnosis of Weichselbaum was: Lymphatic leucemia, leucemic lymphoma, chloroma. He thought it differed from lymphosarcoma of Kundrat in that the lymphoid nodes, notwithstanding their extent, remain in the place of primary growth, and do not infiltrate the adjacent tissue. It resembles lymphatic leucemia in the nodular foci in the mucous membranes, the serosa, peritoneum, liver, spleen, and bone-marrow, and in the blood picture.

Türk objects to the separation of leucemia, and especially lymphatic leucemia, and lymphosarcoma, and insists on the occurrence of transition stages from one to the other. According to him, chloroma is a local lymphosarcoma, a malignant lymphoid hyperplasia, with or without lymphemia. He alludes to the intramuscular infiltration as an evidence of the malignant character of the disease. The differences in blood pictures can be explained by the affection of the bone-marrow.

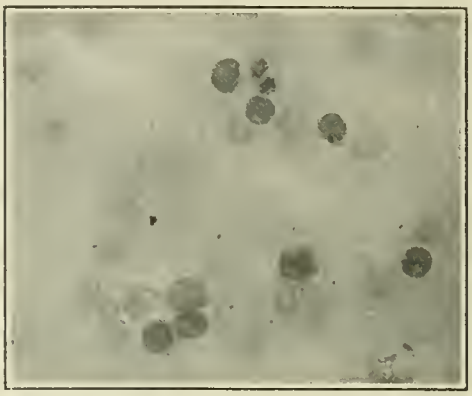
While there are some contradictions and differences of opinion regarding the growths among those who have examined cases of chloroma, I think it can be said that histologically most of them have a structure that can best be compared with that of the leucemic lymphomata. That certain variations occur, however, seems beyond question, and I believe that Dr. Warthin's examinations in this case reveal some important demonstrations of this fact.

MICROSCOPICAL EXAMINATION BY DR. WARTHIN.

Preparation. In the preparation of the material for microscopic examination alcohol, formalin, mercuric chloride, Zenker's, Müller's, and Flemming's were used as fixing and hardening agents. Some of the material was also examined in the fresh state. A portion was fixed and embedded in formol-agar. The greater part was embedded in paraffin. Celloidin embedding was used for a few tissues and for the material fixed in Flemming's. A great variety of staining methods was employed: hematoxylin and eosin, Van Gieson's, carbolthionin, Wright's, Romanowsky's, Jenner's, kresyl echt-violet, polychrome methylene blue, triacid, Weigert's fibrin, Weigert's yellow elastic, Mallory's reticulum, etc. Sudan III was used for fresh material and for sections cut in formol-agar. Potassium ferrocyanide and HCl were used for the iron test. Ebner's fluid was used for decalcifying the vertebræ.

Prevertebral Green Tissue.—Sections cut at right angles to the surface of the prevertebral green tissue show that the upper portion consists of adipose tissue and the lower portion of the dense connective tissue of the prevertebral fascia and periosteum, both being densely infiltrated with cells that in general correspond to the cells found in the blood as described above. The infiltration of the denser connective tissue is arranged in rows or cords of cells extending in the lymph spaces and blood vessels between the parallel to the dense fibers of the reticulum. In the adipose tissue the infiltration is more irregular and the cords of cells proceed in all directions between the fat cells. In many places the latter are atrophic or have entirely disappeared, their places being taken by masses of new cells. In the denser parts of the periosteum the cells are often

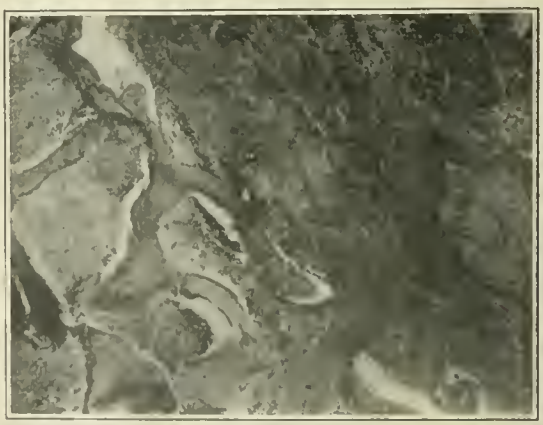
Fig. 1.



Blood showing differences in size, shape, and relative size of nucleus and amount of protoplasm in the lymphocytes.

arranged in rows of single file, and are elongated, often spindle-shaped. In the looser fat tissue and in the lymphatics and blood vessels the cells are usually round or oval. The majority of the nuclei are somewhat larger than a red blood cell, stain moderately deeply, or are pale and have a distinct, finely filamentous network of chromatin. In general the nuclei are round or elongated according to the situation in which they are found, but they are also frequently indented, saddle-bag shaped, bilobed, or divided completely into two. In the cells having two nuclei the latter are often somewhat smaller than the nucleus of the mononuclear forms, stain a little more deeply, and have coarser chromatin threads. The appearances sometimes suggest a recent mitotic division.

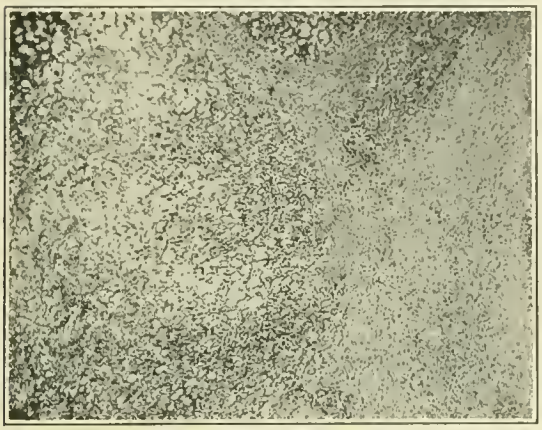
Fig. 2.



Vertebra periosteum and adjacent tissue.

The majority of the cells of the infiltration possess a small rim of protoplasm varying in thickness, and usually more prominent at one side of the cell. Other cells have a more abun-

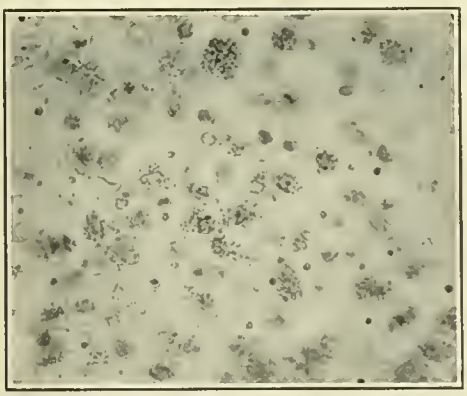
Fig. 3.



Prevertebral green tissue. Periosteum and fat infiltration.

dant protoplasm, but many show no protoplasmic rim at all. On the whole the proportion of cells showing a distinct protoplasmic body is greater in the infiltration than in the blood. The most striking feature of the infiltration is the fact that the majority of cells having a well-marked protoplasmic rim contain *eosinophile granules*. These granules for the greater part are in all respects

Fig. 4.



Primary growth showing large proportion of eosinophile cells. High power.

apparently identical with the granules of ordinary eosinophile cells; they are of the same size, possess the same staining reactions, and in unstained fresh sections appear as greenish-yellow, refractive granules. In some cells the eosinophile granules are fewer, smaller, and paler. A small proportion of cells have a neutrophile granulation, and a smaller number still have a distinct basophile granulation. Apparent transition forms between these are sometimes found. In those cells possessing no granulation the protoplasmic rim is either colorless or at times stains faintly with the nuclear stain, at other times with eosin. Apparent transition forms are seen between the cells without granulation and those with numerous eosinophile granules.

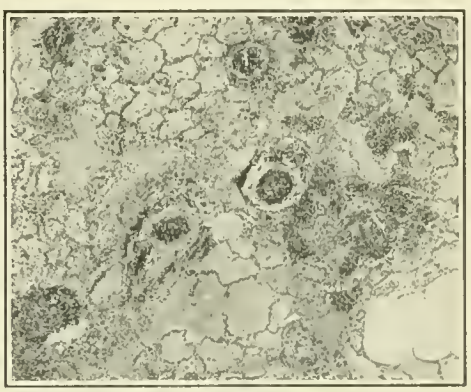
In the majority of fields the number of the numerous eosinophiles is so great that a red tint is given to the section. In some fields every cell may show eosinophile granulation; few fields exist without some eosinophile cells, while in the great majority of fields the proportion of eosinophile cells by actual count runs from 50 to 75 per cent. While from the numerous transition forms found everywhere there can be no doubt

Fig. 5.

Metastases in kidney.

that the eosinophile cells are derived from the large "lymphocytes" of the infiltration, it is impossible to distinguish those eosinophile cells having an abundant protoplasm from the eosinophile myelocyte. Few polymorphonuclear eosinophiles are found in the infiltration. In the denser portions of the periosteum the number of eosinphiles is not so great as in the looser connective tissue and adipose tissue. Many of the spindle-shaped cells in the former, however, show eosinophile

Fig. 6.



Metastases in lung. Pulmonary vessel filled with atypical lymphocytes.

granules. On the whole, the eosinophile cells show no special grouping with reference to the blood vessels.

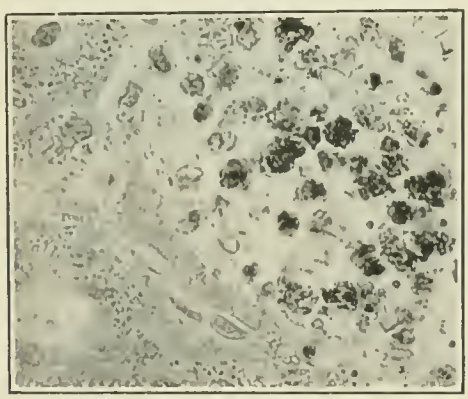
Mast-cells are few or entirely absent. Few polymorphonuclear leucocytes are seen, and are

easily distinguished by their more deeply staining nuclei. Some of these are also eosinophilous. Typical small lymphocytes are also rare. No giant cells or phagocytes found. Few mitoses seen (this may be accounted for by the long time elapsing between death and autopsy), although numerous appearances suggest clumped mitoses. The transition forms of indentation, constriction, and complete division of the nucleus suggest amitotic division. Mitoses were twice seen in cells with eosinophile granulation.

Evidences of degeneration of individual cells are present in the form of pycnosis and karyorrhexis, but definite areas or centers of degeneration are not seen. A few cells containing small vacuoles were found.

No pigment granules are present in any of the cells of the infiltration. The iron test was negative in so far as these cells were concerned. The treatment with osmic acid was also negative. The staining of fresh sections with Sudan III

Fig. 7.



Small metastasis in liver, showing many eosinophile cells. High power.

showed fat droplets in the cells of the reticulum, but not in those of the infiltration. In some areas a very slight diffuse orange was imparted to the cell protoplasm. In the fresh sections the eosinophile granules were seen distinctly as refractive, shining granules having a distinct greenish-yellow color. No other evidence as to the source of the green color of the tissue could be obtained.

There are no positive evidences of the formation of new blood vessels in the infiltrated tissues. On the other hand, these appear poorly vascularized, the blood vessels being apparently those of the original tissue and more or less filled with cells of the same type as those of the infiltration. Very few red cells are seen in the vessels. Under the high power red blood cells may be seen in small numbers scattered throughout the reticular spaces in company with the new cells. It is difficult to decide whether these represent small hemorrhages or whether the red cells lie in blood vessels which are more or less obturated by the new cells. Evidences of red-cell destruction are present in some places, the red cells lying in association with the new cells showing fragmentation, or are represented by granules of iron-containing pigment. As mentioned above, no red cells or blood pigment of any kind occur within the cells of the infiltration. The reticulum of the infiltration is chiefly or wholly that of the original tissues, but there is undoubtedly some increase of reticulum both in the periosteum and denser fascia as well as in the adipose tissue. There is also some thickening of the walls of the medium and larger-sized blood vessels, and an endothelial proliferation of the smaller. As a rule the walls of the large vessels show but little or no infiltration by the new cells.

The infiltration behaves in all respects as a *tumor infiltration*. The original tissues are either crowded apart, compressed, or have become atrophic. Such changes are seen particularly in the case of nerve trunks and ganglia. The spinal nerves and ganglia show especially the results of such infiltration and compression. In the case of ganglia that are completely surrounded by the infiltration and ganglion cells are atrophic and present various appearances of degeneration. The nerve trunks show an infiltration along the blood vessels and lymphatics.

The general picture presented microscopically by sections of the prevertebral green tissue is that of a *tumor infiltration in which the cells are of the type of large lymphocytes or myelocytes, the majority showing eosinophile granulation.*

Smears of the Prevertebral Green Tissue.—Smears stained with hematoxylin and eosin, Wright's method, and the triacid show that the cells are chiefly of the "large lymphocyte" type as found in the blood of this case. The majority have no protoplasmic rim. Many show eosinophile granulation. Clumped and fragmented forms are numerous and many of the nuclei are vacuolated. Few red blood cells are found in the smears.

Green Tissue from Sternum.—The microscopical study of this shows precisely the same structure and character of infiltration of the periosteum and overlying fat and connective tissues as in the case of the prevertebral green tissue. If there is any difference the number of eosinophiles is greater. Smears from this tissue show the same "large lymphocyte" type of cell, the majority eosinophilous.

Bone-Marrow.—Sections of the sternal marrow show that the normal marrow elements are almost wholly replaced by cells of the same type as those of the periosteal infiltration—that is, by cells of the large lymphocyte type, the majority showing eosinophile granulation. No bone-marrow giant cells are seen. Very few red blood cells are present and only two cells were found that could be regarded as nucleated red cells. Few neutrophile myelocytes are present and small lymphocytes and polymorphonuclears are also very few in number. Transition forms between the large lymphocytes with small protoplasmic rim and those with more abundant protoplasm containing eosinophile granules are numerous.

Inasmuch as the eosinophile "large lymphocyte" passes by transition forms into cells morphologically identical with eosinophile myelocytes, this fact may be taken as evidence of the derivation of the latter type of cell from the former. The eosinophiles are somewhat unevenly distributed; in some fields 50 to 80 per cent. of all nucleated cells may show eosinophile granulation, in others the proportion may drop to 10 to 20 per cent., but in many sections the majority of fields show a preponderance of eosinophiles. The polymorphonuclear eosinophiles are relatively very few. The nuclei of the majority of the eosinophiles in general resemble those of the non-eosinophile large lymphocytes. All possible transition forms exist between such eosinophiles and those forms with more abundant protoplasm resembling eosinophile myelocytes. In their general characteristics, size, shape, pale nuclei, small amount of protoplasm, etc., the cells constituting the mass of the sternal marrow are identical with those of the periosteal infiltration. The capillaries and blood vessels of the marrow are nearly completely obturated by cords and masses of cells of the same type. The delicate reticulum of the marrow appears to be but slightly increased.

Smears of Sternal Marrow.—Smears of the sternal marrow fixed in absolute alcohol and ether and stained with hematoxylin and eosin, triacid, etc., or fixed and stained by Wright's method are composed almost wholly of cells of the "large lymphocyte" type, the majority containing eosinophile granules. Numerous large eosinophile cells with very pale, large, single nuclei are also present. These resemble eosinophile myelocytes; many of the nuclei are vacuolated. There is a great variation in the size of the eosinophiles, and numerous transition forms exist. The majority of the non-eosinophiles have little or no protoplasmic rim and correspond with the cells found in the periosteal infiltration and in the blood vessels. The nuclei of these also show vacuoles of varying size. Numerous degeneration forms are present. The smears contain but a few red blood cells and only a very few nucleated reds. The background of the smears is made up to a very large extent of free eosinophile granules.

Vertebral Marrow.—Sections of decalcified portions of the bodies of the vertebræ show an enlargement of the marrow spaces and a rarefaction of the bony trabeculæ. The enlarged marrow spaces are filled with closely crowded cells of the "large lymphocyte" type identical with those found in the sternal marrow, prevertebral and sternal periosteal infiltrations, and in the blood vessels. The number of cells having a rim of protoplasm is somewhat greater than elsewhere, and many cells show a distinct cell body. There are also more degenerating forms. The eosinophile cells are not quite so numerous as in the sternal marrow or the periosteal infiltrations, but nevertheless in the majorty of fields form a relatively high proportion of all cells present. In the portions fixed in Müller's fluid the protoplasm of the majority of the cells replacing the marrow elements is distinctly chromaffinic to some extent, having a distinct brownish or greenish-yellow color. There are but few red cells and no nucleated red cells were found. The polymorphonuclears and small lymphocytes are relatively very rare. No bone-marrow giant cells were seen and no plasma or mast-cells found. Owing to the fixation used the neutrophile cells could not be distinguished. In some of the large lymphocyte forms having an abundant protoplasm, very small and light eosinophile granules are present. The reticulum of the marrow is apparently slightly increased and consists of fine fibrillæ.

The most important fact determined in regard to the relationship between the marrow condition and the prevertebral infiltration is the demonstration of the direct connection existing between the two. Sections made through the prevertebral green tissue and periosteum, and extending into the body of the vertebra show that the large masses of cells in the enlarged marrow spaces are in many instances directly continuous with the periosteal infiltration by means of relatively large openings in the bone. Smaller cords of cells extend from the marrow spaces through small openings in the bone and are continuous without break with the periosteal infiltration. Such direct continuity between the marrow spaces and the periosteal infiltration are so numerous that they can be seen in nearly every section. The openings are most probably enlarged lymphatics or blood vessels. Red cells occur in some of them in association with the cells of the large lymphocyte type. In other cases the growth of cells in the medullary spaces appear to have caused a disappearance of bone and a direct extension of cell growth outward into the prevertebral tissues. The infiltration from the vertebræ does not extend into the intervertebral disks and is scanty over them. It surrounds the body of the vertebra more or less uniformly, but is most marked at those places where it is continuous with the growth in the marrow spaces. In some places masses of cells have grown or collected beneath the periosteum, raising it from the bone. The various pictures presented suggest growth outward from the bone and not from without into it. The spinal nerves and ganglia are surrounded by the infiltration and are to some extent themselves infiltrated. There is an increase of interstitial connective tissue within some of the ganglia.

The careful study of such sections leads to the conviction that we have to deal here with a *primary growth within the marrow spaces which infiltrates or grows directly through the lymphatics and blood vessels or breaks through the bone and secondarily involves the periosteum and surrounding tissues.* The cells of this growth are identical morphologically with the so-called large "lymphocytes," large mononuclears, and eosinophile myelocytes of the normal bone-marrow.

Smears of Vertebral Marrow.—Smears of the

vertebral marrow fixed in absolute alcohol and ether and stained with hematoxylin and eosin, triacid, etc., or fixed and stained with Wright's, present the same picture of those obtained from the sternal marrow. Few red cells are present, and no nucleated forms were found. The number of eosinophiles appears not so great, and there is a larger proportion of degenerating forms. The majority of the nuclei have either large or small vacuoles, many nuclei consisting of a large vacuole having only a faint rim of chromatin. Numerous nuclear forms suggesting clumped mitoses are present as well as those forms suggesting amitotic division. The background of the smears is made up chiefly of eosinophile granules. Numerous very pale nuclei covered with eosinophile granules and having no protoplasmic body are seen.

(To be Continued.)

MEDICAL PROGRESS.

MEDICINE.

Ainhum.—H. N. Blum (*Med. Record,* October 22, 1904) reviews what is known concerning this peculiar disease, and cites a series of typical cases from the literature. The affection occurs almost always amongst the dark-skinned races of tropical and subtropical regions, and is characterized by a progressive constricting sclerotic ring around the bases of the digits of the hand or foot, especially selecting the little toe of either or both feet and ending in a gradual amputation of that portion of the affected member distal to the constriction. The condition is local, there being no manifestations except on the toes or fingers, and it never recurs at the site of amputation. It is sometimes confused with leprosy or Raynaud's disease, but may be differentiated from these by its duration, its purely local nature, the characteristic "scleroderma" and the absence of the specific bacilli of leprosy. Very little is known as to its cause, and the author agrees with Matas in terming it a trophoneurosis. His own case occurred in a negress of sixty-five years, whose right little toe was affected in the characteristic way. The toe was disarticulated at the metatarsophalangeal joint under cocaine anesthesia, and the cicatrix has since remained in healthy condition.

Rhythmical Mechanical Compression of the Thorax in the Treatment of Dyspnea.—Various drugs and also mechanical or manual compression have been used for the treatment of conditions in which the chest does not perform proper excursions, but none, according to D. Boghean (*Berl. klin. Woch.,* October 17, 1904) have been entirely successful. Any form of apparatus with which it is desired to deepen the respirations, must neither wear out the patience nor the strength of the patient or operator, and in order to be regular and constant in its action, must be kept in motion by a suitable motor and easily regulated. The author has devised a rather complicated apparatus which is believed to fulfil these requirements. It is driven by a small electric motor and the active principle consists of a pair of pads which compress the patient's chest, after the machine is set in motion, during the act of expiration, so that a greater volume of air is expressed from the person's lungs than would occur with his unaided efforts. This is believed to increase the carbon dioxide output and thus relieve the subjective sense of dyspnea. The question as to whether it is the lack of oxygen or the accumulation of carbon dioxide which causes the dyspnea in any given case is answered by the observations of a host of writers who claim that both are at fault, but that the organism is much more tolerant toward a lack of oxygen than toward an excess of carbon dioxide.

Osteomalacia and Thyroid Disease.—The not uncommon association of osteomalacia with disease of the thyroid gland—myxedema, tetanus, and especially Basedow's disease,—have led to a series of observations by E. Hönicke (*Berl. klin. Woch.,* October 31, 1904) which seems to show that osteomalacia may be traced to a primary disease of the thyroid. He has studied the geographical distribution carefully of both diseases and has also noted that the thyroid gland in osteomalacia was abnormal and that in the latter condition, symptoms of thyroid disease were also present. It is probable that a primary disease of the thyroid glands leads to a disturbance of the phosphorus metabolism, which is the main characteristic of osteomalacia. The various forms of the latter constitute a disease entity, and the peculiarities of the puerperal form may be explained on physiological grounds. The operation of castration is effectual because it diminishes the loss of phosphorus, and the administration of phosphorus is of value because it increases the amount of phosphorus. The author is about to publish a more complete account of his observations of which this is merely a preliminary communication.

Artificial Pernicious Anemia.—By repeated injections of pyrogallic acid into animals, grave blood-changes may be brought about which in many ways resembles pernicious anemia. In a series of experiments, P. Reckzeh (*Zeitsch. f. klin. Med.,* Vol. 54, Nos. 3 and 4) found marked reduction of hemoglobin and red cells, poikilocytosis and the appearance of nucleated erythroblasts. An advanced degree of anemia is, however, necessary for the appearance of megaloblasts. If an examination of the bone-marrow be made, changes typical for pernicious anemia may also be found. A marked leucocytosis is also a pronounced symptom; at first the polymorphonuclear elements, especially the younger forms with single, indented nucleus predominate, later, the lymphocytes are decidedly more abundant, indicating general failure on part of the bone-marrow. All these changes correspond to observations made on the blood of cases of pernicious anemia in man. Strangely enough, if young animals are selected for experiment, the composition of the blood resembles that of the anemia pseudoleucemia infantum of v. Jaksch in that the leucocytes are enormously increased and the relation of whites to reds frequently reaches 1 to 12. It is probable, therefore, that this disease is closely allied to pernicious anemia and the leucocytes are more numerous solely because the bone-marrow of the young reacts more strongly to irritation. This is corroborated by the observation that the polymorphonuclear cells predominate.

Gastric and Intestinal Crisis.—In all cases of gastric and intestinal crisis of tabetic origin observed by C. A. Ewald (*Centralbl. f. d. gesamt. Therapie,* October, 1904), other symptoms of tabes were also present. Common eye symptoms were pupillary rigidity, paralysis of the external muscles of the eye and optic atrophy. Difference in the size of the two pupils is not so valuable since it may occur in other conditions and even in health. It must not be forgotten that pupillary rigidity may also be an early symptom of multiple sclerosis, cerebral syphilis or tumor, general paresis and even alcoholic neuritis. It is, therefore, wrong to diagnose tabes from only one or two symptoms. Westphal's sign

is of great importance, but it has been known to disappear and then to reappear in the later stages. Disturbances of sensation, especially about the lower extremities, are only rarely absent and sometimes paresthesiæ in the posterior pharyngeal wall on the anal mucous membrane are complained of. In the cases observed by the author, a history of syphilis was obtained in 62 per cent. The average duration of the disease was two years and ten months. A period of a year and a half may lie between the first attacks, but later they increase in frequency and may appear daily. The duration of each separate attack varies between one-half to forty-eight hours. Their onset is very sudden with epigastric cramps and nausea, soon followed by severe and extremely painful emesis. An aura in the form of pain in chest and back is sometimes observed. As soon as other tabetic symptoms make their appearance, the crises usually lose their intensity. The condition of the gastric juice varies, but diminished acidity seems to be the rule. Constipation is not rarely present. Rectal crises manifest themselves in intense tenesmus with the discharge of only slight amounts of feces and mucus. They are less frequent and never occur together with gastric crisis. The treatment is very unsatisfactory and morphine can hardly be dispensed with, since there is as yet no specific. Recently, epidural injections of cocaine have been employed with good result.

THERAPEUTICS.

Treatment of Laryngeal Tuberculosis.—Laryngeal tuberculosis without its pulmonary congener is very rare, and in cases where examination of the lungs fails to elicit the symptoms of pulmonary invasion Nikitin (*Prakt. Vrach,* No. 39, 1904) thinks that the changes in the lungs are so deep-seated and limited as to escape for the time being objective examination. The results of the treatment as based on observations of 1,732 cases, are never permanent, but a temporary benefit is undoubted. Thus in one case of infiltration of the arytenoid cartilage the author succeeded in bringing about cicatrization of the ulcer with subsequent complete cure of the patient; who seven months later, however, died of tuberculous meningitis. In another case treatment of the larynx by curettage followed by the application of lactic acid and general constitutional treatment has so far improved the patient's condition that he was enabled to resume and contiue his avocation, that of a teacher, for two years; he succumbed, however, to pulmonary tuberculosis, although he never complained of laryngeal trouble again. The treatment is either medicinal or surgical. The medicinal means are either antiseptic or analgesic. In hypersensitive patients the treatment should be limited to inhalation or insufflation of solutions or powders. The author finds an excellent palliative in one-half per cent. solution of nirvanin followed by the insufflation of orthoform or di-iodoform. If the infiltration is limited and the course of the pulmonary affection slow, curettage may be resorted to, to be followed by the application of lactic acid. Laryngeal ulcers are to be treated by inunction with solutions of lactic acid, phenol-glycerin, parachlorphenol or phenosalyl. The more superficial the ulcers the easier they admit of application. Phenol, when dissolved in glycerin, yields completely its burning quality and may therefore be applied in concentrated solutions. A transient stage between the medical and surgical treatment is to be seen in the application of galvanocaustics and electrolysis. Tracheotomy as recommended once by M. Schmidt, was at first received favorably, but it was gradually pushed into the background, for to be successful it must be employed early in the disease, when the patients rather prefer milder treatment. Moreover, tracheotomy is objectionable on the ground of constant irritation as induced by the presence of the canula, the possible risk of necrosis of the tissues, the predisposition to infection, and the difficulty which is presented to the expulsion of the pulmonary secretion. More is to be hoped from tracheotomy in conjunction with curettement of the tuberculous infiltrations by the aid of a sharp spoon, in cases that are not very far advanced. The operation enables one to do the curettage in an open field, and not through the mouth, which presents considerable difficulties. Thus in a girl, aged nineteen years, a laryngotomy was performed after a preliminary tracheotomy, and after opening the larynx the infiltration on the posterior wall of the larynx and ulcers on the left vocal cord were curetted and then treated by galvanocautery. The laryngeal wound was then closed. The pain on deglutition was gradually diminished, and on the sixth day when the canula was taken out, patient was able to swallow freely. The postoperative course ran smoothly. Later, she completely recovered, but the voice remained hoarse, and examination of the larynx elicited the presence of cicatrices at the sites of the ulcers. At present, at the expiration of two years, patient still enjoys excellent health.

Treatment of Leucemia with Roentgen Rays.—One case of myelogenous leucemia was treated daily by the Roentgen rays for one month by D. Fried (*Münch. med. Woch.,* October 4, 1904). The daily exposure was three to fifteen minutes. At the end of the treatment, the leucocytes had fallen from 62,000 to 6,000, the spleen was considerably smaller, the patient's weight had increased and subjective symptoms were no longer complained of. His improvement still persisted a month and a half later. Similar good results were observed in a second case. It has been proven by animal experiments that cells of the spleen and lymph-nodes are readily absorbed under the influence of the Roentgen rays and early cases of leucemia are entirely benefited more than by anything else. It is still too early to say if the improvement is permanent or if advanced cases are also influenced.

Sprain and its Treatment.—G. Norstrom warmly advocates (*Med. Rec.,* November 19, 1904) early massage and active and passive motion in cases of sprain. If physicians paid more attention to this method of treatment they would keep many patients out of the hands of "bone setters" and other quacks. Properly applied massage often cures in one or two cases that under the old treatment by immobilization would consume weeks. The massage first applied should be very gentle, so as not to cause irritation or too much pain, and then gradually be increased as the tension of the tissues subsides. Not until the inflammation has become less intense is it advisable to introduce real frictions. At first the sittings should be protracted, of at least twenty minutes' duration, and should, when possible, be repeated several times a day. The treatment may be summed up as follows: (1) At the initial stage, in the presence of classical phenomena, including a great deal of pain, effleurage. (2) When the pain has decreased a great deal frictions and passive movements; later, active movements. Walking at the beginning ought not to be permitted. (3) In all sprains of the lower

extremities, after every seance, application of a gauze bandage, a precaution all the more indicated when the patients are allowed to use their legs and walk. (4) In order to prevent real relapses, as well as to prevent the inflammation taking on a chronic character, the treatment ought to be kept up until complete restitution has taken place.

Oxygen in Combination with the Different General Anesthetics.—J. T. Gwathmey publishes (*Med. Rec.*, November 19, 1904) the results of an extensive series of observations made to determine the value of oxygen as an addition to general anesthetics. The conclusion reached is that oxygen increases the value of anesthetics as regards life, without decreasing their anesthetic effect. The author's investigations were made upon a series of one hundred cats, chosen so as to present as little variation in size, etc., as possible. The animals were killed by means of the various anesthetics in common use, administered by means of a closed mask and with the admixture or either air or oxygen, the time required being noted in each case. As a result of the figures so obtained the author says that, regardless of the anesthetic used, animals have lived twice as long with oxygen as when air was used. They usually die quietly with oxygen, and in convulsions with air. With oxygen the heart also continued to beat longer after respiration ceased. Efforts at resuscitation are more likely to be successful when oxygen has been used, and in private practice the after-effects of the anesthetic are reduced by this means. The experiments show that a mixture of chloroform and oxygen is more than twice as safe as chloroform and air, and is also safer than any of the other general anesthetics with air. This means that instead of having a very high mortality, chloroform given with oxygen is now as safe as ether. But all of the other general anesthetics are also increased in value by oxygen, and the use of this method of administration practically eliminates the percentage of danger which has hitherto been recognized as inseparable from the practice of anesthesia.

Thiocol and Sirolin.—Very good results are reported by D. Szaboky (*Wien. klin. therap. Woch.*, October 16, 1904) from the use of thiocol and sirolin (a solution of thiocol). The former drug is given in doses of 0.5 gram four times daily, and incipient cases of tuberculosis are often cured or considerably benefited in four to six weeks. Even in advanced cases the cough is alleviated, the temperature reaches normal, and the appetite improves remarkably. In intestinal tuberculosis, thiocol has a very good effect, since it seems to be possessed of almost specific action upon the intestines. In laryngeal tuberculosis it may be applied locally with good result.

PRESCRIPTION HINTS.

Treatment of Pruritus Ani.—At the recent meeting of the British Medical Association Dr. Malcom Morris spoke on this subject. Pruritus ani, he said, is often very refractory to treatment, but the practitioner should never despair, as few cases are incurable, though many will tax his therapeutic ingenuity to the uttermost limit. The first thing to be done is to seek for the cause, and remove it or neutralize its action. Each group of cases—that is to say, those dependent on constitutional disorders, those produced by reflex disturbances, those due to a local condition, and those that are the expression of a neurosis—must be dealt with by measures appropriate to the causation. There are certain principles of therapeusis applicable to each of these several groups; but in the details of treatment each case must be dealt with in accordance with its special features and with the idiosyncrasy of the patient. In all cases, therefore, a careful examination, general and local, must be made before any system of treatment is instituted. The following formulæ have proved useful in his hands:

℞ Acid. carbolici ..... ℥xx
Cocaine hydrochlorat. ..... gr. x
Vaselin ..... ʒ j
Fiat ung.

℞ Acid carbol. ..... ʒ ss
Cocainæ ..... ʒ ss
Aq. laurocerasi ..... ʒ j
Aq. Rosæ ..... ʒ iij
Fiat Lot.

℞ Acid. carbol. ..... ʒ ss
Hyd. perchlor. ..... gr. ij
Ol. olivæ ..... ʒ ij
Ung. zinci oxid. benzoat. ..... ad. ʒ j
Fiat ung.

Tarry preparations are useful. The sapo carbonis detergens may be used for ablutions; the lotio picis carbonis may be employed in calamine lotion as a vehicle (ʒ ij of the former to ʒ viij of the latter). Tar, combined with bismuth, may also be applied in the form of an ointment, composed as follows:

℞ Ung. piois liquidæ ..... ʒ j
Bismuth subnitratis ..... gr. xx
Adipis ..... ad ʒ j
Fiat ung.

Compresses soaked in oil of cade are often very useful. Peruvian balsam in vaselin is a good application. A suppository of extract of belladonna (½ gr.) at bed-time, will often prevent the nocturnal exacerbation. Painting the part with lead in spirit and water is a soothing remedy. Nitrate of silver in sweet spirits of nitre (gr. iij to ʒ j) is often useful. Among other sedative remedies which may be tried are menthol, ichthyol, chloral hydrate, borax, benzoin, and tincture of iodine. When piles are the cause of the trouble, the unguentum gallae will often relieve the itching as well; painting or injecting with hamamelis is also useful for the same purpose. Oxide of zinc is best applied in the form of a cream as follows:

℞ Zinci oxidi ..... ʒ ij
Lanolini ..... ʒ ij
Ol. olivæ ..... ʒ ss
Aquæ calcis ..... ʒ ss

Among antiseptics, the most useful is mercury. A very convenient form is the oleate, which may advantageously be combined with oleate of morphine. An ointment composed of calomel ʒ ss to an ounce of vaseline is also serviceable. Black wash is particularly useful; it may be used either alone or in a vehicle of mucilage or tragacanth as follows: :

℞ Lot. nigræ } ..... ãā ʒ iv
Liq. calcis }
Mucilag. tragacanth ..... ʒ j

Another useful mercurial lotion is the following:

℞ Hyd. perchloridi ..... gr. ij
Glycerini ..... ʒ ss
Aq. chlorof. ad ..... ʒ iij

Ammoniated mercury in benzoated lard (gr. xx. ad ʒ j) is also valuable. Calomel in powder may render excellent service.

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SATURDAY, DECEMBER 3, 1904.

FOOD PRESERVATIVES AND ADULTERANTS.

At the last meeting of the New York Academy of Medicine, Dr. H. W. Wiley, the Chief of the Bureau of Chemistry of the United States Department of Agriculture, read a preliminary report with regard to the influence of preservatives and adulterants in food upon the public health. A very full abstract of his interesting paper will be found in our Society Proceedings for this week. The full report, consisting of over 500 pages of printed matter, is to appear shortly.

The most interesting feature of the report is the thoroughgoing conservatism with which the subject has been approached and the judicial straightforwardness with which the conclusions are presented. Nothing is said that would give material for a scare head or a sensational news item, and accodingly, Dr. Wiley's report did not occupy the attention of the daily papers in any large degree. What has been lost in sensation, however, has been gained in scientific value, and there is no doubt that as Americans we may feel proud of the fact that the government investigations have been conducted in a manner so worthy of American science.

That even such mild preservatives as boric acid and borax may be a source of some danger, when constantly used in food, there can no longer be any doubt. The American investigators, however, did not find any of the serious effects that were claimed to have been observed in Germany. The various boric derivatives cause distinct disturbance of metabolism, a lessening of nitrogenous waste and an increase in the phosphate elimination. These are of themselves quite sufficient to deter those who are at all anxious about their health from the frequent use of food containing such preservatives. One effect always produced is a lessening in the weight of those who have partaken of these materials, either in large quantities for a short time, or in small quantities for a longer period. As a matter of fact, as was pointed out in the discussion, boric acid has long been recognized by conservative clinicians as one of their best remedies for adiposity.

The only serious danger seems to be from the possibility of kidney irritation. There is no doubt that nephritis is on the increase in this as well as the boric acid taken with food is excreted through in most other civilized countries. Four-fifths of the kidneys. The remaining fifth is eliminated by the sweat glands, and thus grows a burdensome duty upon portions of the excretory system which are the best auxiliaries to the kidneys. There is no doubt, however, that other preservatives, such as saltpeter, are much more irritant to the kidneys, and yet have been used in the making of brine for many years, apparently without producing any serious effect and certainly without arousing exaggerated fears of possible evil results.

The whole subject deserves the conservative treatment it received at the hands of the Department of Agriculture and the only suggestion is not that the use of such preservatives should be forbidden by law, but that whenever their presence is considered necessary a label should be affixed to the food materials to indicate that fact. We have had much of sensational newspaperism with regard to this whole subject. It is refreshing to find it treated so calmly and judiciously, and at the same time so thoroughly and with such scientific completeness.

CEREBROSPINAL CYTODIAGNOSIS.

While cytodiagnosis, so far as the examination of pleural exudates is concerned, has now a well-established basis, and constitutes one of our most valuable diagnostic methods, the same

can hardly be maintained in the case of the cerebrospinal fluid. When it was shown at first that tuberculosis of the pleura, and this only, led to lymphocytosis of the corresponding exudate, it was thought that meningeal tuberculosis would give rise to a similarly specific result. As a matter of fact, evidence was soon forthcoming that tuberculous meningitis, in contradistinction to the ordinary form, was associated with an increased number of lymphocytes in the cerebrospinal fluid, but further investigation showed that this symptom could in no sense be regarded as specific. For, on the one hand, cases of meningeal tuberculosis were reported in which polynuclear neutrophiles predominated, while on the other lymphocytosis was observed in many non-tuberculous cases. It was thus found quite frequently in progressive paralysis and tabes, in cerebrospinal lues, in syphilitic hemiplegia, as also in uremia and tetanus, and still other conditions.

The explanation of this more generalized occurrence of lymphoctyosis in the cerebrospinal fluid was sought in the element of a supposed meningeal irritation. It is to be noted, however, that in cases of apoplexy of non-syphilitic origin (which the Germans very appropriately term "Alters Apoplexie") no lymphocytosis occurs, even though most marked symptoms of irritation exist. In syphilitic hemiplegia, on the other hand, an increased number of lymphocytes is apparently constant. The conclusion therefore would seem quite justifiable that the syphilis and not the hemiplegia is the deciding factor in the production of the lymphocytosis.

Niedner and Mamlock, in a recent communication from v. Leyden's clinic, have published a series of observations which tend to throw new light upon this question. They point out that the lymphocytosis, which is observed not only in syphilitic cerebrospinal affections, but in syphilis in general apparently, as also in uremia and tetanus, suggests that intoxications may play a prominent rôle in its production, especially if a virus should be operative which is constantly present or renewed, and which produces a continuous irritation of the central nervous system. This assumption would also explain the absence of lymphocytosis in epilepsy which, barring Merzbacher's statement to the contrary, appears to be the rule. Experiments on rabbits, in which convulsions were produced by means of strychnine, lend support to this view.

That an intoxication in itself, however, is not necessary, and that the time element is even more important is shown by the observation that lymphocytosis may also occur in certain cases of brain tumor, and Niedner and Mamlock suggest that in the traumatic cases of epilepsy reported by Merzbacher, in which the lymphocytes were found increased, the result was probably referable to prolonged and intense stimulation. Experiments in this direction likewise yielded positive results. Meningeal irritation, accordingly, if of any moment at all in the production of lymphocytosis, can only be regarded as a factor of secondary importance.

Viewed from the standpoint of diagnosis, the examination of the cerebrospinal fluid thus appears somewhat disappointing in its general aspects. That it may furnish information of value, however, is undoubted. Further investigations are now urgently needed to ascertain the earliest period of syphilis at which lymphocytosis will occur, and to determine the phases of the disease with which it is associated. That it may be demonstrable at a time when secondary symptoms already exist (ulcus durum and exanthem) appears certain.

ECHOES AND NEWS.

NEW YORK.

Dr. Sachs Leaves the Polyclinic.—Dr. B. Sachs has resigned his position as Professor of Neurology in the New York Polyclinic Medical School.

Eastern Medical Society.—At the annual meeting of the Eastern Medical Society, to be held at Clinton Hall, December 9, an address will be delivered by Dr. A. Jacobi. The Genito-Urinary Section of the Eastern Medical Society will meet on Tuesday, December 6, at 8.30 P.M., at Clinton Hall, 151-153 Clinton Street, Manhattan. Program: Five-minute papers on "Syphilis, as Observed in General Practice." (1) Syphilis of the Nose and Throat, by I. Grushlaw, M.D.; (2) Syphilis of the Eye, by A. A. Himowich, M.D.; (3) Syphilis in Obstetrics and Gynecology, by E. K. Browd, M.D.; (4) Syphilis of the Nervous System, by Emil Altman, M.D.; (5) Syphilis of the Viscera, by L. F. W. Haas, M.D.; (6) Syphilis in Surgery, by Chas. Goodman, M.D.; (7) Syphilis in Pediatrics, by A. Hymanson, M.D.; (8) Pathology and Diagnosis of Syphilis, by Ludwig Weiss, M.D.; (9) Treatment of Syphilis, by Daniel A. Sinclair, M.D. Discussion by Drs. S. Lustgarten, Charles Warrenne Allen, Samuel W. Brickner and B Lapowski. The profession is invited.

Annual Meeting of Skin and Cancer Hospital.—The following officers were elected at the twenty-second annual meeting of the New York Skin and Cancer Hospital at Nineteenth Street and Second Avenue: President, J. Cleveland Cady; Vice-President, William C. Witter; Secretary, L. Duncan Bulkley; Treasurer, Edward Winslow. The hospital has administered during the past year to some five thousand patients.

Health Board Dairy Inspection.—The plan suggested by James P. Atkinson, chemist of the Health Department, seeking to get at the root of the adulteration evil, provides that no permit shall be given to any concern to sell milk in the city unless the right to inspect the dairies of the concern is conceded as a condition. If at any time the dairies are found not to meet the requirements of cleanliness made by the Board of Health the permit to sell milk in the city shall, according to the plan suggested, be revoked at the discretion of the Board. Local inspection is at present fairly well systematized, each milk store being listed and the city divided into districts, so that the inspectors can keep close watch upon the retailers. Many arrests in all parts of the city show that adulterated milk is being sold without regard to locality. Raids have been made on some of the largest retail stores and depots and samples of milk taken which failed to pass satisfactorily through rigid chemical tests. Retailers who supply some of the largest hotels and restaurants have been found to have in their possession milk as far from pure as some of the samples taken from dealers in the east side tenement house districts. Manhattan has been divided into eight districts for inspection. There are three districts on the west side and five on the east side. There are 5,137 milk stores in Manhattan, and the inspectors from the Health Department make the rounds of them by districts from day to day. The large number of arrests recently after adulterated milk had been found in possession of the retailers, has caused the retailers to be more exacting with the wholesale dealers, and so far as this affects the quality of the general supply the results have been gratifying. It is almost invariably asserted by the accused retail dealer that the milk was adulterated before it was sold to him. A great advance will have been made if inspection of the dairies be made a routine procedure.

PHILADELPHIA.

The Pathological Society of Philadelphia.—Dr. Victor C. Vaughan, of the University of Michigan, will address the Philadelphia Pathological Society on December 8, at the College of Physicians, on the relation of Food Adulteration to the Public Health. A reception will be tendered to Dr. Vaughan immediately after the meeting.

Exhibit of White Haven Sanatorium.—Donation day for the White Haven Sanatorium was held during the past week at 1604 Chestnut Street, where an exhibition was given of the work of the institution. Model rooms for consumptives and tents for outdoor treatment were shown. Lectures by members of the Phipps Institute were given daily.

German Hospital.—Donation day at the German Hospital on Thanksgiving day was so well attended that over $12,500 were received, including $5,000 for a free bed. Improvements made during the past year include a four-story building containing a nurses' dormitory and diet kitchen at a cost of $30,000.

Infirmary and Laboratory at the Zoo.—A fully equipped infirmary and pathological laboratory has been established at the Philadelphia Zoological Garden. It will be used for the study and treatment of the diseases of animals and also for the study of comparative pathology. Dr. Charles B. Penrose is to be director of the laboratory and Dr. C. Y. White assistant director.

Mutter Lecture.—The Mutter lecture on Surgical Pathology was delivered at the College of Physicians, Friday, December 2, 1904, by Dr. G. H. Monks, Lecturer on Surgery in the Harvard Medical School. His subject was "Studies in the Surgical Anatomy of the Small Intestine and its Mesentery."

The Samuel D. Gross Prize.—This prize of $1,200 will be awarded on January 1, 1905. The conditions annexed by the testator are that the prize "Shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens." It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery. The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 South Thirteenth Street, Philadelphia," on or before January 1, 1905. Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

CHICAGO.

Resolution Placing Cook County Hospital Staff Under Civil Service Rescinded by County Board.—At a meeting of the Cook County Board, held November 25, the resolution offered at a previous meeting placing the medical staff of the County Hospital under the merit law was rescinded. The President of the Board, Mr. Foreman, promptly vetoed this resolution, and the Board decided to absolutely ignore him by ordering the disapproval placed on file. This confused state of affairs was the culmination of a meeting of the Public Service Committee, composed of all the members of the Board, which lasted all day, and at which physicians, both the opponents and the upholders of the civil service examination, were present and said what they had to say. It would seem from the remarks that were made that those opposing the application of the merit law to the County Hospital medical staff manifested jealousy of what they termed the domination of the medical branch of the University of Chicago (Rush Medical College) in the conduct of the hospital affairs. Dr. C. E. Humiston said "It is Standard Oil against Castor Oil." Dr. William E. Quine, Dean of the College of Physicians and Surgeons, the Medical Department of the University of Illinois, expressed his grievance against the way things were conducted at the hospital. In the last examination for internes, candidates from one institution triumphed when they appeared before examining boards from their own college, but showed only

ordinary ability when examined by members of other schools. He said, "The men who brought that condition to pass are now trying to pack an examining board in favor of one institution. I am opposed to that conception of reform." The President of the County Board was drawn into the discussion by Dr. Thomas A. Davis, who accused him of acting as dictator in the hospital affairs. He said there were at least six men in the room who heard the President of the Board insist on Dr. Billings' election to the position of President of the hospital staff. These adverse declarations were not allowed to pass without reply from the upholders of the merit law. Dr. Hugh T. Patrick defended the proposed examination, when a commissioner of the board interrupted him to ask his opinion about the opposition of so many physicians to the civil service examination. Dr. Patrick replied that "I cannot tell you all that I think about those doctors without being discourteous toward some of the estimable members of the profession."

Charge of Favoritism Answered.—The charge that favoritism would be shown toward men connected with Rush College by the examining board, as at present constituted, was answered by Dr. Frank Billings. Without descending to personalities, Dr. Billings made the following declaration: "In the constitution of the examining committees of the board on the main subjects, which are surgery, medicine, nervous diseases, children's diseases, and obstetrics, Rush College has a minority rather than a majority. In the committee on surgery there are five men, one from Rush, one from Northwestern, and one from the Physicians and Surgeons. The other two are outsiders, not connected with any college, but it so happens that all five are graduates of Rush. In the department of medicine the three examiners are Dr. Quine, Dr. Frank S. Johnson and Dr. Otto Schmidt. Rush has no representation on this committee. Northwestern and Physicians and Surgeons have one each, the other is unattached. Of the two men on the nervous disease committee, neither is a Rush college man, and the three obstetricians are divided between the three big colleges. The same is true of the committee on children's diseases and the committe on skin diseases. In pathology one is from Rush, one from Northwestern and one unattached. One man charged that out of forty-eight physicians and surgeons on the examining board thirty-eight were from Rush College. This statement was promptly corrected by Commissioner Walker. He declared that there were thirty men on the board, divided as follows: Seven Rush, seven Northwestern, five Physicians and Surgeons, two eclectics, two homeopaths, two dentists and five at large. The Public Service Committee, by a vote of 9 to 4, recommended that the county board rescind its action. This resolution was adopted despite the fact that the matter is before Judge Tuley on a petition for an injunction restraining the civil service commission from holding the examination. The board formally then accepted the recommendation.

Chicago Orthopedic Society.—At a meeting of the society, held November 22, the following officers were elected: President, Dr. John Ridlon; Vice-President, Dr. John Lincoln Porter; Secretary and Treasurer, Dr. Arthur B. Hosmer.

McCormick Memorial Institute for Infectious Diseases Receives a Donation of $100,000.—Mr. Otto Young has given this amount toward the endowment fund of this Institute. The philanthropic project is delayed pending proposed amendments to the hospital ordinance.

GENERAL.

Bubonic Plague Reported in Chile.—While the prevalence of bubonic plague has not been officially declared in Chile, it is stated that there are cases that the Chilean Government daily conceals in order that steamers may not omit touching at ports at which there are no sanitary regulations.

Existence of Yellow Fever Denied.—Dr. Carlos Finlay denies positively the existence of yellow fever in the island of Cuba. It was not within possibility, he said, that the half dozen Marine Hospital Inspectors stationed at Cuban ports should have discovered cases which the thoroughly organized Health Department of Cuba had failed to discover, and more than improbable that they should know of such cases and yet fail to call the attention of the Cuban department to them. Dr. Finlay said that the only yellow fever case originating in Cuba in more than three years was that of the American, Scott Fuller, at Punta de Sol, which was extremely light, and of questionable authenticity. Suspicion attached also to Fuller's attendant, but the disease had not developed. Health officers at all Cuban ports, Dr. Finlay said, treat all fever symptoms in arrivals from Caribbean and South American ports as suspicious, and also all others that are in the least questionable. Dr. Delgado, a Cuban, who is the United States Marine Hospital Inspector at Havana, disclaimed any knowledge of yellow fever cases this year, except in six persons, who arrived from Mexico, and who were immediately isolated. Of those two died and the others recovered.

Meeting of American Association for the Advancement of Science.—The University of Pennsylvania will be the scene of the greatest meeting of scientists in its history during the Christmas holidays. Arrangements have been made for forty different societies to convene here at that time, the university acting as the host to them all. The principal convention will be the fifty-fourth annual meeting of the American Association for the Advancement of Science, which will meet December 27 to 30. Ten of the forty societies mentioned above are sections of the American Association, while the other thirty are national societies, dealing with all aspects of science. The American Association will attract at least 1,500 delegates and educators. Carroll D. Wright, the Commissioner of Labor, has been selected to deliver the principal address, which will be made on December 28.

Massachusetts General Hospital.—The Zander Room at the Massachusetts General Hospital has now been open for patients since June 23, 1904, and its services are becoming more and more in demand for medical, surgical, orthopedic and nerve cases of all sorts. The old Bigelow amphitheater, left vacant by the completion of the new operating rooms two to three years ago, and since that time used only for clinics, has been entirely remodeled into a large, well-ventilated apartment, with a gallery and adjoining offices, and here are set up the 40 to 50 beautiful pieces of mechanism which go to make up the Zander apparatus. There are recording machines for lateral curvature and scoliosis of all kinds; machines for massage of every part of the body, from the little finger to the entire trunk; apparatus which can be operated by the patient—action move-

ments or by electricity—passive movements, for exercising every part, muscle or joint, of the human body, slowly or rapidly, with practically no force at all, or with a very powertul leverage. Patients come here to be treated from the hospital wards, the Out-Patient Department, and from outside physicians (in a few instances), the greater number of cases are naturally orthopedic, lateral curvature, scoliosis, weak backs, flatfoot, etc.; surgical cases, fractures, sprains in convalescent stage and arthritides of all kinds; new cases, anterior poliomyelitis and neuritis and medical cases; neurasthenics, neuroses and cardiacs recovering compensation. The entire department is under the direct supervision of Dr. Böhm, who came from Europe for this purpose. Every patient recommended for treatment is carefully examined and measured, recorded and then given a prescription, with the list of exercises or massage to be taken; the patient then, in charge of an assistant, goes through with his movements as ordered. Take a cardiac case for example: The heart, size, murmurs, etc.; lungs as to edema, and pulse as regards rapidity, volume and tension are looked over, and the patient given his list of exercises, which at first will consist of the lightest of passive movements. After the morning's work the heart, pulse, etc., are again examined, and in this way the progress of the case is gauged. Gradually the passive movements are increased and changed to active ones, more and more rigorous in character, until finally compensation completely restored, the patient is able to leave the hospital and take care of himself. The neuroses, myocarditis and fatty hearts seem to receive the most benefit from this treatment. For the most part the patients enjoy the work, and in almost every case derive great benefit from it, and their numbers are increasing daily.

Fourth Pan-American Medical Congress.—This congress will convene in Panama the first week in January next, and bids fair to be a most delightful midwinter trip. The delegates will leave this country by the Atlantic, Pacific and Gulf Coasts the last week in December. They will return by the same routes or will make round trips (see appended list of routes). The Public Health Association meeting will take place on the following week in Havana, and those desirous of attending both meetings, can arrange to do so. From Havana, the return trip can be made directly north to New York by water or via Miami or Tampa, Florida, or New Orleans. The connections and dates of sailing are now being arranged. The Panamanian Government has appropriated $25,000 for the scientific session and the entertainment. The congress will be held from the second to the sixth of January. The afternoons will be devoted to the scientific sessions and the mornings and evenings to trips and social functions. So far as can be learned, the program in Panama will be a reception on the first day, by President Amador of the Panama Republic, and the formal opening session of the congress the same evening. On the second day an excursion to the canal in the morning, meeting of the various sections in the afternoon, and a banquet in the evening; on the third day, an excursion down the bay to Taboga Island, where a Panama breakfast will be served, scientific sessions in the afternoon and a ball in the evening. On the fourth day, an excursion to the United States Army barracks in the morning, section meetings in the afternoon and the formal closing session in the evening. On the fifth day, in the afternoon, those of the congressists who intend going to Cuba to attend the meeting of the Public Health Association, will sail, while those who intend returning home by way of New Orleans or New York, will remain until the following Tuesday. The program of the Public Health Association will be an inviting one and of an important character. The Cuban Committees are making extensive preparations for the entertainment of the congressists. From the returns now coming in, it would seem that at least one-half of the members of the Public Health Association will make the round trip to both medical meetings. It is understood that the Pan-American congressists who do not belong to the Public Health Association will be invited by this Association to take part in their discussions as their guests, and that they will also be invited by the Cuban Entertainment Committee to participate in the festivities.

Dr. Rudolph Matas, of New Orleans, Secretary of Section of General Surgery for the United States, informs us that an arrangement with the United Fruit Company has been perfected by which a steamer of this line will leave New Orleans for Colon on Wednesday, December 28, 1904, at 10 A.M. (instead of Friday, December 30, at 11 A.M., as previously announced), which will reach Colon (Panama) on Monday, January 2, 1905, the opening day of the Congress. In view of the facilities offered to reach Panama via New Orleans it is expected that many will choose this route and those who intend to do so will please forward their names to Dr. R. Matas, Secretary of Section of General Surgery, No. 2255 St. Charles Avenue, New Orleans, La., not later than December 22, 1904.

Routes and Rates to the Fourth Pan-American Medical Congress in Panama, and the Public Health Association Meeting in Havana. (Combined Trip.)—The routes to the Fourth Pan-American Medical Congress are gradually narrowing down as more advantageous rates are being offered. Those who go only to the Pan-American Medical Congress will probably go and return by the way of New York or New Orleans. From the former starting point $100 will be charged for the round trip; from the latter point $50. By far the greater number, however, will make the round trip to both of these meetings, returning to Baltimore via Jamaica on the steamer which the commission is arranging to charter. The Di Giorgio steamship line of Baltimore, Md., offers special ship for exclusive use of party, including meals and berth, at sea and in ports, to Panama, Havana and return, attending both meetings and visiting Kingston and Port Antonio, Jamaica, for $130, providing fifty persons take passage. The Athos will leave Baltimore, December 27, 11 A.M., arriving in Panama January 2, P.M., or 3, A.M. Leave Panama January 7, A.M., arrive in Havana January 9, A.M. Leave Havana for Jamaica January 16, A.M., arriving at Baltimore January 18. The Athos is one of the staunchest of steel ships, with electric lights, running water, and all modern equipments in the way of toilet conveniences. She has a fine deck surface and a number of deck staterooms, and is guaranteed to be in first-class condition. The president of the Steamship Company will be one of the party on the trip. The members of the party can live on board when in ports if they desire, thus saving hotel expenses. Lunch and dinner will probably be served on deck when in smooth water.

Physicians can bring members of their families and friends at the same rates. All arrangements must be closed ten days before sailing date. Number of passengers limited to seventy. Application for reservation of staterooms, berths, etc., to be addressed to Ralph F. Nalley, 105 Park Avenue, Baltimore, Md.

Tuberculosis Investigation.—The imperial commission, appointed by the Government to investigate the relations between bovine and human tuberculosis, met November 26. According to the *Sun*, Dr. Weber reported that the investigations hitherto made showed that bovine and human bacilli were absolutely distinct biologically and one never develops or changes into the other. An examination of fifty-six bodies of persons who died of tuberculosis showed the presence of human bacilli only in fifty. There were bovine bacilli, however, in six, three of whom were young children. The surmise is permissible that the latter received the bacillus from the milk of a diseased cow. Two other cases, which Professor Weber regards as most important, were where corpses showed bovine bacilli in the glands and human bacilli also in other portions of the body. They were distinct cases of double infection. Another important case was that of lung tuberculosis where bovine and human bacilli were associated. The commission is reported to have reached the general conclusion that tuberculosis in human beings was caused by the human bacillus, but urges the careful use of all prescribed measures to prevent infection with the bovine bacillus.

The American Journal of Anatomy.—This journal was founded in 1901 for the purpose of collecting and publishing in a worthy manner contributions to the science of Anatomy emanating from American investigators. Since the inauguration of this journal, there have appeared two volumes containing about 500 pages each, with many text-figures and monochrome and colored plates. The titles of papers, including those in Volume III, are announced in this circular. The wealth of material at the disposal of the editorial board has insured prompt publication, and has made it possible to maintain a creditable standard. The presentation of the subject of anatomy has been representative of its various phases, including not only contributions on Human Anatomy, but also on Comparative Anatomy, Embryology, Histology, Neurology and Cytology, branches of the science of Anatomy which are so intimately bound up with the problems of Human Anatomy that they have been included within the scope of this journal. It was hoped by the founders of the journal that it would not only serve as a medium of publication for a worthy type of anatomical research, but would also tend to create a higher standard in anatomical work and attainment, and thus also advance the cause of modern scientific medicine. That his hope has already been realized in a measure seems reasonably assured. According to an arrangement made with the Association of American Anatomists, the *American Journal of Anatomy* has become the medium for the publication of the proceedings of this Association, together with abstracts of the communications presented at its annual meetings. The board of editors, realizing that the founding of a scientific journal could not be undertaken without some financial guarantee to defray the deficit which would, in all probability, be incurred for a number of years, have, in conjunction with a number of generous persons, subscribed to a reserve fund to insure a beginning. The regular annual subscriptions, together with this reserve fund, which is, however, available for only a limited period while the journal is becoming established, have enabled the board of editors to maintain the *American Journal of Anatomy* in its present form. It will be readily agreed, however, that the success of the journal can be permanently assured only by the continued support of its regular subscribers, and by further efforts of those who are interested in its welfare. The board of editors feel warranted, from the encouragement and support which they have thus far received, in expecting further additions to the subscription list from institutions and individuals who profit by the enterprise of the journal.

OBITUARY.

Dr. Henry M. Lyman, formerly connected with Rush Medical College, died in Chicago, November 21, after an invalidism of four years. The cause of death was angina pectoris. He was born in Hilo, Hawaiian Islands, November 26, 1835, and was graduated from Williams College, Massachusetts, in 1858, as valedictorian of his class. He began the study of medicine at Harvard Medical College, but graduated from the College of Physicians and Surgeons of the City of New York in 1861. After a short term as interne in a medical hospital, he entered the army and served as acting assistant surgeon from 1862 to 1863, being on duty in the military hospitals of Nashville, Tenn. In 1863 he established himself in practice in Chicago, paying special attention to diseases of the nervous system. From 1871 to 1876 he was professor of chemistry in Rush Medical College; from 1876 to 1877, professor of diseases of the nervous sytem; from 1877 to 1879, professor of physiology and of nervous diseases, and from 1889, professor and emeritus professor of the theory and practice of medicine in the same institution. He was also professor of medicine in the Northwestern University Woman's Medical School from 1880 to 1888. He was the author of a textbook on the "Theory and Practice of Medicine," which was published in 1892, and of numerous articles in the literature.

Dr. Nelson L. North, of Brooklyn, was stricken with a hemorrhage of the lungs at Gates Avenue and Broadway last week, and died shortly afterward. He was born at Elba, N. Y., in 1830, and studied medicine in the College of Physicians and Surgeons. He was the author of several medical works and belonged to the American Medical Association, the New York Academy of Medicine, and the Kings County Medical Society.

Dr. W. L. Coleman is dead at his residence in Austin, Texas, aged seventy-one years. He was an authority on yellow fever, having served through several epidemics and won a Howard medal, given in appreciation of his services in fighting this disease. During the Spanish-American war, Dr. Coleman was sent by the United States Government to make an examination of the yellow fever condition of Cuba. He was the author of a book on the disease.

Peculiar Electrical Accident.—According to the lay press a user of the telephone while talking pressed an electric button, and in some manner established a circuit and was rendered insensible from a resulting shock. The cause of the accident could not be ascertained.

CORRESPONDENCE.

THAT OPTOMETRY BILL AGAIN!

To the Medical Profession of the State of New York:

During the legislative session of 1904, a society of opticians known as The Optical Society of the State of New York, petitioned the legislature to enact a law creating a State board of examiners in optometry. Before this board would appear all persons who desired to practise optometry, which practice was defined in the act to be enacted as "the employment of any means other than the use of drugs for the measurement of the powers of vision and the adaptation of lenses for the aid thereof." The Medical Society of the State of New York opposed this bill, and with the aid of other organizations, especially the County Medical Societies and the Optical League (an organization of opticians doing a legitimate business), secured its defeat.

Since the last election, this optical society has been forwarding to physicians in all parts of the State, as well as to the members-elect of the next legislature, a document giving reasons why a law of this kind should be enacted and asking their endorsement.

At the time of the hearing on the Optometry Bill before the legislative committees of last year, the opticians presented a long list of names of physicians who had endorsed their efforts. The undersigned communicated with every name on that list, and learned that where reputable physicians had endorsed the measure it was through a misapprehension of the real purpose of the bill, and when its true character was pointed out to them, they not only withdrew their endorsements but in many cases wrote vigoroues letters in opposition to it. Many of the names were fictitious, the communications addressed to the addresses given being returned as not found. A large number were the names of irregular practitioners, as osteopaths, spiritualists and so on. There is no doubt that the object of the opticians in presenting the present arguments is to obtain the endorsement of physicians so that at the next legislative session these signatures can be used to offset the opposition which will be presented by the regularly organized medical bodies of the State. I therefore address the profession of the State, urging its members not only to refuse to endorse this and similar measures but to make an effort to present to their representatives, both in the Assembly and the Senate, the true merits of the case, and urge their opposition to it.

The arguments presented by the opticians are very misleading. Their claim, of course, is that they desire to protect the community from incompetent people, but the fact is (as every well-informed physician must know) that they are all incompetent. They seek to create a separate profession. This they deny, but in their remarks before the legislative committees they continually used the expression "our profession." They seek the legal right not only to apply lenses for the correction of defective vision which may or may not be due to errors of refraction, but they also seek to treat headaches, dizziness and the various reflex phenomena which may be due to affections of the eye itself or to affections of organs remote from the eye. They pose as being competent to make a differential diagnosis. To prepare physicians to do this work the law requires that a four-years' course in a medical college shall be taken, after which a medical examination conducted by the State must be passed. Physicians themselves find that after this preparation it is often difficult to be sure of one's ground; and, if this is so, there seems to be no good reason why opticians should be allowed to undertake the same work with any less preparation.

It seems unnecessary at this time to go into an extended argument in opposition to this bill. The effort to secure its enactment is not an honest one. Opticians know that they are violating the law in following the occupation which they are now engaged in, and they say that if their bill is enacted it will not give them any more powers than they now possess, while the fact is that the enactment of the bill will give them the legal right to do what they are now doing in violation of the law. They really desire to use the legislature as a tool to put them beyond the grasp of the law; and if this is once clearly brought to the attention of our senators and assemblymen, there is no doubt what the outcome will be. We have met this and similar efforts more than once in the past and there is no doubt that we shall meet many more in years to come; but from our experience we feel justified in making the assertion that if the medical profession will present a united opposition to measures of this kind, they will never be enacted into law in the State of New York.

Frank Van Fleet, M.D.,
Chairman of the Committee on Legislation of the Medical Society of the State of New York.

New York, November 23, 1904.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held November 17, 1904.

The President, A. H. Smith, M.D., in the Chair.

The scientific business of the evening was under the auspices of the Section on Medicine and the first part of the program consisted of a demonstration of the Hoy Opaque Projector by Dr. H. Holbrook Curtis.

Stereoscopical Reflection.—The Hoy Opaque Projector enables the lecturer to demonstrate opaque objects on the screen, as does the stereoscope for transparent. The human hand, for instance, can be held at the focus of the lens and the representation of it made to appear on the screen. Any microscopical specimen may be demonstrated to a class in the same way. Pictures and illustrations of various kinds in books, even those that are delicately colored may be enlarged and reproduced exactly as they are.

Dr. Piffard, in discussing the Projector, said that some thirty years ago an instrument similar to this had been used by Professor Arnold. Owing to the fact, however, that a close examination always gave more information than such a demonstration, it proved not to be so useful as was anticipated.

Preservatives in Foods.—H. W. Wiley, Chief of the Bureau for Chemistry of the United States Department of Agriculture, then gave a preliminary report of the results of the investigation that has been made during the past year, with regard to the influence of preservatives and adulterants in food on the public health by the United States Department of Agriculture.

Dr. Wiley said (author's abstract):—"The point of view of the physician in respect of the use of preservatives in foods is somewhat different from that of the manufacturer or even of the general consumer. The term 'preservatives in foods' may justly include also coloring matters and certain edulcorants, such as saccharin and its compounds. The point of view of the manufacturer of food products relates to the preserving of the products in such a manner as to present them to the consumer in a practically fresh state. The view of the general consumer relates to the consumption of foods which are pre-

served in the manner indicated by the constituency which is in ordinary good health. The point of view of the physician includes also and particularly the effects of foods of this kind upon invalids and convalescents. It cannot be denied that good food is the principal weapon in the armament of the physician. As long as his patient can digest and assimilate a wholesome diet there is always hope of recovery. The very moment the digestive organs, however, cease to act, when the food which is given is no longer digested or assimilated, there is every reason to fear the gravest danger. Food, therefore, in this sense, is the most important element of the materia medica.

"In order that there may be no unnecessary discussion of certain points in connection with this investigation, I may state, without hesitation, that probably the great majority of healthy and vigorous people can consume a certain amount of food preservatives without any apparent ill effects. In the researches which we have conducted at Washington this has been illustrated time and time again. This, however, is not the important point of the investigation. It is not the purpose of an investigation of this kind to prove that every person who consumes preserved foods is subject to injury. The case is clearly made out, if those who are weakest and least able to withstand any unusual disturbance of the metabolic process suffer injury. Foods, in other words, are prepared for the whole people, the strong and the weak, and they should be so safeguarded that no added substance should be permitted which could work an injury on the least resistent.

"Nor do I think it is a sufficient answer to this statement to say that there are many conditions in which pure food itself, of an excellent quality, produces injurious effects. This, of course, can not be denied. Every physician meets in his daily practice many cases of this kind. The fact that foods of undoubted purity may themselves work injury is no argument in favor of admitting to these foods foreign and unnecessary substances which are in themselves injurious or become so when mixed with foods. For instance, we have shown in late researches in the Bureau of Chemistry, that cranberries contain large quantities of benzoic acid, in some cases amounting to the ordinary quantities of this substance used as a food preservative. The natural occurrence of benzoic acid in cranberries does not warrant its addition to those foods which do not contain it, nor does it warrant the addition of benzoic acid in cranberries themselves. Cassava, which is a common food product in the tropics and as far north as South Georgia, contains considerable quantities in its natural state of hydrocyanic acid. So great is the quantity of this poisonous substance in some of the varieties grown in the tropics that it is never eaten until it has been boiled for the purpose of drying off this poisonous substance. The occurrence of this poisonous matter in a natural food cannot be cited as a justification for adding hydrocyanic acid to foods in general. As is well known this same substance exists in peaches and apricots, especially in the pit, although in much smaller quantities than in the cassava. Nor can we admit, it seems to me, the arguments *de minimis*. The advocates of the use of antiseptics in foods, I believe, admit, without exception, that all of them in large quantities are injurious. They also cite what is perfectly true, that common salt in large quantities is injurious, and therefore they draw the conclusion that as common salt, which is an antiseptic, is not injurious in small quantities, and is injurious in large quantities; therefore, any other antiseptic, for instance, salicylic acid, may be judged of the same way. But this is not the case, as will be seen by a closer analysis of this argument. Common salt is a necessary constituent of human foods. It is acknowledged by physiological chemists to be the source of hydrochloric acid which is so necessary in stomach digestion. Hence, not only is it an antiseptic but it is much more a condiment and a necessary constituent of food. In fact, nearly all the condimental substances in common use, with the possible exception of the peppers and spices, are at the same time condimental and have, to a certain extent, a food value. This is especially true of salt and sugar. It probably is not true of vinegar, which is solely condimental and antiseptic, but is not of any appreciable value as a food. Alcohol is also condimental and preservative and has a distinct food value. The physician thus makes a broad distinction between antiseptics which are condimental and to a certain extent nutritive, and antiseptics which are non-condimental and non-nutritive. There can be no objection, therefore, to the proper use of common salt, of sugar, of vinegar, and of wood smoke in the preservation of foods. These bodies all reveal themselves by their taste or odor and thus a natural limit is set which prevents their excessive use. On the contrary, the other line of antiseptics and preservatives which are non-condimental, such as are represented by salicylic and benzoic acids and boric acid, practically have no taste or odor in the quantities in which they are employed, and hence the consumer is not notified by any natural property of these bodies of their presence. It appears, therefore, that here can be no justification from a dietary point of view in the addition of even small quantities of non-condimental antiseptics to foods. It might be granted, for the sake of argument, that if there were only one antiseptic known, its use in small quantities might be in certain cases allowed. For instance, in the case of salicylic acid, which many healthy persons can consume, even in considerable quantities, without any very great discomfort; if this were the only antiseptic used the *argumentum de minimis* might be allowed to stand. But when we consider that there are a half dozen, or perhaps more, non-condimental antiseptics in common use, all of which might be consumed in a single meal under certain circumstances, it is evident that the *argumentum de minimis* fails to apply, for if the consumer should eat six small quantities it would be equivalent to eating one large quantity.

"Again we find the argument used in favor of antiseptics of a mineral character, like boric acid and borax, sulphites, etc., to the effect that the presence of mineral salts is absolutely necessary to physiological processes. We all admit, I think, without doubt, that the metabolic functions depend entirely for their action on the laws of physical chemistry. Osmotic pressure, solution, translation through membranes, diffusion, etc., are the physical forces which develop the phenomena of living beings. But in this case it is not evident that any unusual and unknown substances are employed. We have, in common salt and the mineral salts which exist in ordinary foods, in the carbonates and the bi-carbonates which are probably formed during the metabolic processes, an entirely sufficient amount of mineral matter to secure the proper activity of all the organs. There seems to be, therefore, no justification for the

addition of other substances of a mineral nature to aid a process already sufficiently well secured.

"In the investigations which were made in the laboratory at Washington with boric acid and borax, distinct disturbances of the metabolic functions were disclosed. They were not of a great magnitude and might easily escape the ordinary observations. They were revealed, however, by the chemical balance in a most unmistakable manner. Even when a small quantity of boric acid was administered daily, not to exceed a half a gram over a period of fifty days, there was noticed a gradual loss of weight, a slight loss of appetite, occasionally a tendency to a feeling of fulness in the stomach and especially in the head, developing at times into a dull headache, a marked but not very distinct indisposition or inability to perform the ordinary mental exercise which the young men engaged in during their daily work, a disturbance in the phosphoric acid and nitrogen balances, an increase in traces of albumen which exists in certain cases in the urine, and other evidences of change which showed an effect which could not be regarded as otherwise than deleterious.

"On the other hand, when the preservative was given in rapidly increasing doses over periods of twenty days, beginning with half a gram and rising to as much as three or four grams a day, not only were the disturbances which relate to the changes in the balances, as indicated by the chemical analysis observed, but also marked symptoms of *malaise* and discomfort, loss of appetite, rapid loss of weight, occasional nausea, fullness in the head, bleary eyes, dull and persistent headache, inability to perform the ordinary mental duties, etc.

"Both of these sets of experiments lead to the same conclusion, namely, that while most healthy young men can take a considerable quantity of borax for a short period without any apparent discomfort, when continued for a long time or when rapidly increased in amount, distinct disturbances of metabolic activity take place. Marked symptoms of discomfort, though not amounting to real illness, are observed.

"Another point that must be considered is the fate of the added preservative in the organism. This we have studied very carefully both with borax and with boric acid, as well as with salicylic, benzoic and sulphurous acids. Only the data of the first two, however, are complete. The work shows that in round numbers 80 per cent. of the total quantity of boric acid and borax administered is excreted by the kidneys. Nearly all the rest of it is excreted through the skin. These data show very clearly where the burden of excretion lies. Furthermore, it was shown conclusively that neither boric acid nor borax undergoes any marked change in the body. Boric acid remains practically boric acid and the borax remains borax. It might be assumed with a good deal of probability that the boric acid would be neutralized to a certain extent by the alkaline bodies with which it comes in contact, especially in the small intestine and in the blood. On the other hand it might be reasonably inferred that borax would undergo more or less decomposition in the presence of the acids in the stomach. Doubtless both of these assumptions may be partly true, as it is rather difficult to affirm that there is no change at all in these bodies. It may be that a little of the boric acid is neutralized, forming a borate or bi-borate, and a little of the borax decomposes, forming free boric acid and a sodium salt, probably chloride or lactate. There is one point of judgment, however, which shows that little change takes place, namely, the effect of these reagents upon the acidity of the urine. During the administration of boric acid the acid in the urine was markedly increased while during the administration of the borax it was markedly diminished and in some instances an alkaline reaction set up.

"Aside from the points which are here presented, another phase of the subject must be considered, namely, the additional burden which is placed upon the kidneys. Of course, it may be said, as it doubtless will be, that the amount of this burden is very slight, but, as a rule, a great burden which produces a breaking strain is made up of increments of very small particles. I think it must be admitted without question that the kidney is a well worked organ ordinarily and has about all that it ought to be called upon to do. If you add to foods a half dozen different substances all of which are practically eliminated by the kidney you increase its burden to that amount. This increased burden does not seem to be justified by the good, if any, which is gained. It will not be denied by any one that practically every one of the substances used as antiseptics in foods may be, in itself, a very useful remedy in certain diseases. We know that borax and boric acid are largely used for remedial purposes and the same is true of salicylic acid, of benzoic acid and of formaldehyde. This, it does not seem to me, is a justification for the use of these bodies upon those who are perfectly healthy. In other words, drugs are not indicated except in cases of disease and where they are used for prophylaxis.

"Summing the matter up in the light of the experiments which we have conducted and of those which have been conducted by others, we admit first of all that there are many contradictory data which are difficult to reconcile. For this reason it seems rather precarious to base a definite conclusion upon experiments with one or two persons. The number in our experiments was twelve, and had there been facilities for caring for them it would have been better if the number could have been larger. It is only when we consider the data for all twelve as a whole that definite and reliable conclusions can be drawn. It must be admitted further that the mental state must be reckoned with in all experiments of this kind. But whatever particular mental irritation or excitement is produced, repetition and time will tend to diminish and even neutralize it. For a few days it is more than probable that the mental attitude will have a considerable effect, but when a young man sits down for an eight or nine months campaign of this kind he soon falls into a state where it is believed the mental attitude does not produce a very great effect. It might have been possible to control this to a certain extent by running a number of blanks, that is, having those upon the table who supposed they were getting preservatives and yet were really not. The limited number of subjects which we had at our disposal, however, seemed to indicate that this method of control would not be as valuable as to use them all for a direct experiment.

"Finally it may be said as a result of our experimental work, that there is every indication to lead us to believe that the use of boric acid and borax should not be forced upon any one. In those cases where it may be good it can be specially provided. They certainly should not be used with infants, invalids, convalescents, or those who suffer from any particular digestive idiosyncrasy. It should not, I believe, be put in foods of any kind except when they are plainly marked, and even not then except in special cases and for special purposes. What is true of boric acid and borax will probably be found

equally true though perhaps not to the same degree of all the other common antiseptics in use."

The discussion was opened by Dr. G. L. Peabody who said that in the section on legal medicine at Paris in 1900, Dr. Brouardel had declared that the amount of preservatives now being employed in food, was, to say the least, disquieting. Unfortunately the present methods of legal procedure are not such as to limit what evil there may be in the matter. The question usually put by the Court is, Would the amount of preservative known to be present in a given sample, prove fatal? Of course this question must be answered in the negative. In the same way, the administration of any poison might be proved harmless. If one one hundreth of a grain of morphine is recovered from the organs of a patient, this demonstrates the presence of the poison, but cannot be said to show that a sufficient amount was taken to produce death. In spite of all the symptoms of opium poisoning then, the legal decision may be in favor of a criminal. Dr. Peabody said that when a small amount of a substance was frequently repeated, it may have more injurious influence than if an equal amount were administered all at once. It was the teaching some years ago that a good sized dose of calomel, 10 to 20 grains, repeated once if necessary, given just after the initial chill of pneumonia and before the stage of consolidation could be demonstrated, might abort the pneumonia. In not a few instances, Dr. Peabody himself has given 20 grains and repeated the dose within twelve hours. All that resulted was a smart purgation without any serious poisoning affect. If, however, calomel were given in divided doses of say one-tenth or one-twentieth of a grain every hour until 20 grains were taken, salivation and other toxic symptoms would be so severe as probably to prove fatal. Dr. Peabody pointed out that the utility of foods depends mainly upon their instability, that is on their tendency to change easily and so be assimilated. Whatever hinders this tendency for food materials to change, impairs digestion. Hence the danger of food preservatives. This danger is all the greater because preservatives are more apt to be used in the food of the lower classes, who need all the nutrition they can obtain from their food and who are deprived of part of its beneficial influence by the slowness with which the gastric juice will act upon it. It is not as yet known how many anemias may be due to the fact that insufficient nutritive material is absorbed from the digestive tract to keep up blood equilibrium. In France there has been much discussion with regard to what is called plastered wine. A certain amount of sulphate of potash and plaster-of-Paris is added to wine in order to give it a dry flavor. Many good authorities consider that these materials are prone to produce a distinct tendency to cirrhosis of the liver. In at least one case, that has been under Dr. Peabody's observation, bottled beer, which had been prepared in some special way, proved a source of annoying digestive symptoms to a physician who had tried the experiment over and over again of using it after a quitting of it for a time and had always had a return of his symptoms.

Old Persons.—The danger of substances accumulating in the system is especially great in old persons. Brouardel showed by experimentation that at the age of twenty-five years, if a gram of salicylic acid were taken, its elimination began one hour after ingestion and was practically complete after twenty-four hours. At the age of forty-four years, however, it was several hours before elimination began, and it was at least two days before the last of the acid had disappeared. At the age of sixty-five years, elimination did not begin until the second day and took many days to complete. Therefore it is dangerous to have any substance frequently given to old persons if there is any tendency for it to accumulate. Certainly boric acid and borax cannot be considered entirely harmless. A five per cent. solution in the pleura and in the case of a lumbar abscess has been known to prove fatal. Even less than this has given rise to very serious symptoms in cases of dilated stomach when boric acid solution was used for washing out the stomach once or oftener each day for a prolonged period.

Boric Acid in Therapeutics.—Some years ago boric acid obtained a reputation as a remedial agent in epilepsy. As a consequence, it was used, either in combination with the bromides or by itself, in considerable daily doses for long periods. It was then proved to be a distinctly dangerous drug. It seemed to be especially irritant to the kidneys, and patients suffering from any kidney disturbances at the beginning of the treatment soon proved intolerant to its prolonged employment. Even in patients, however, and except for their epilepsy, who seemed to be perfectly healthy at the beginning of the boric acid treatment, symptoms of uremia sometimes developed. The mere stoppage of the administration of the drug did not always prove sufficient to put an end to these unpleasant complications. Fatal uremia, even was not unknown. It is very evident that the experience of physicians all over the world is entirely opposed to the thought that boric acid, even in doses usually not considered large, can be considered harmless, if it is taken for a long time. This of itself would seem to be enough as regards the use of the substance as a preservative for food materials.

Difficulties of Investigation.—Dr. Darlington, Commissioner of Health of New York City, said that many complaints are received with regard to supposed adulterated food, but that it is extremely difficult to secure evidence of the presence of enough poisonous material for purposes of prosecution. Besides, the department is not ready for extensive investigation in this line. Often it is found that in cases of supposed poisoning of food, patients have really died from some disease. This is not infrequently the case with regard to terminal kidney disease or with regard to such affections as cerebrospinal meningitis. Of course, under conditions, such as have recently been exploited, in which wood alcohol is added to whiskey, serious results lead to the detection of the poison. It seems clear, however, that wherever any chemical preservative is added to food, this fact should be stated plainly on the label. With regard to milk, however, it seems utterly inadvisable that any preservative should be allowed. No antiseptic can make up for proper cleanliness of milk. New York draws her milk supply from a distance of four hundred miles in some cases, but the only preservative needed is ice. The local government board in London allows the addition of borax to cream and butter, but this seems only to leave a path open for the use of preservatives and other material.

Milk Preservation.—Dr. Rowland Freeman said that for a time it was thought that preservatives might be permitted in milk. Whenever this substance is properly handled, however, that is put on ice, shortly after it is obtained, there is no need of any chemical preservative. As a matter of fact, permission to use it will surely result in serious inconvenience to the children of large cities.

Increase of Gastric Disorders.—Dr. E. E. Smith said that it seems not unlikely that the increase of gastric disorders, which has been noted in recent years, may be due to the fact that preservatives have been

used more than was suspected. This is especially true for the increase of acidity which has become so common a complaint, especially in the case of neurotic individuals. It seems not unlikely that the effort of the stomach to overcome the alkaline food preservatives leads by reaction to an increase of the gastric acidity beyond what is necessary. In experiments with borax upon animals, Dr. Smith found that a special tendency to the production of irregular tufty patches of hair was produced, so much so that the borax animals could be picked out at once. As the borax is excreted through the skin, it seems not unlikely that it is the irritation of its presence near the hair follicles that causes this result.

Experts Differ.—Dr. Piffard said that in a case in which he was asked to give expert testimony before a legislative committee, he found that a distinguished professor of physiology told the senatorial committee that borax was absolutely harmless in food. Notwithstanding this, the law was passed forbidding its use. Since then judges have thrown cases of conviction out of court because they insist that there is no evidence of the poisonous effect of such substances. It seems clear that there is much more danger in whiskies than has been thought. Wood alcohol is present much oftener than might be imagined. The especial flavor of Scotcy whisky, which is now so popular, is said to owe its flavor to amyl alcohol. The German spirits, made so extensively from potatoes, differ entirely from grain spirits and are likely to prove more harmful.

Formalin in Milk.—Dr. Jacobi said that Von Behring now announces that all tuberculosis in children is due to the use of milk containing infectious material. He proposes to treat all milk with formalin, which will kill these germs and eradicate tuberculosis. He seems to consider formalin harmless. Another German observer, however, has shown that the lab ferment, that is the active agent in the digestion of milk, becomes absolutely useless in the presence of eevn a small amount of formalin. Hence, if formalin is to be employed very generally, children may be protected from tuberculosis, but they will develop nutritional affections likely to prove much more serious. The use of formalin as a food preservative is now known to have produced an epidemic of dermatitis, two cases of which proved fatal in the English army. Its origin was unknown at first, but on its recurrence, it was traced to the milk supply, one part of which contained formalin and the consumers of which suffered while those fed from the other milk did not suffer. Prof. Gerhardt used to advise small doses of boric acid several times a day as a remedy for adiposity. He was an excellent observer and a conservative physician and it was on the strength of the results obtained, that he continued to use it for many years. Dr. Jacobi himself has employed it for this same purpose with excellent results. It seems to prevent an accumulation of fats and to cause fatty material to be eliminated that would otherwise be stored up in the system. He has never found it advisable to give more than two grams a day and usually one gram has sufficed. It is evident that the constant use of this material by persons who, instead of wanting to lose, wish to gain weight, would be eminently inadvisable. With regard to bottled beer, Dr. Jacobi has known one case in which some fluorine was present. It did not occur in draft beer of the same kind. This brand of beer is still manufactured and does not seem to have been improved any in this respect.

What Preservatives?—Dr. Andrew H. Smith said that it is very hard to draw the line as to what is and what is not a proper preservative. Salt has been used so long that there is now no objection to its employment. Saltpeter is mixed with all brines and yet though we know it to be a virulent poison, no serious objection to its use has ever been known. Instead of having vaguely poisonous affects, this depresses the heart and irritates the kidneys very definitely. Nearly the same thing may be said of the preservative element in wood smoke, that is creosote. As a matter of fact few people use enough of such preserved food to notice any serious affects. Elimination prevents accumulation and so saves the individual. Silver salts may produce argyria, yet the occasional use of half a grain of nitrate of silver is an excellent therapeutic measure in certain cases of indigestion. It would be necessary therefore to be sure of definite knowledge with regard to harmfulness before suggesting legal regulations in the matter.

Dangers of Preserved Food.—Dr. Smith said that it must not be forgotten that for certain varieties of preserved food there is constantly some danger of ptomain poison. In such cases the use of a mild antiseptic may prove of great service without doing any harm. After a recent gastronomical experience, in which he indulged in some *pâté de foies gras*, he experienced all the bother that might result from ptomain poison. No amount of persuation could convince him that it would not have been better for him to have had a few grains of borax or boric acid with the preserved meat, even though it might involve some little delay of digestion or some slight irritation of the kidney, provided it would ward off the serious and painful symptoms. Therefore, it seems better that the chances of possible injury should be weighed against present customs in the manner of eating and a truly conservative course followed. With regard to cold as a preservative, Dr. Smith acknowledged that ice was indeed a very valuable preservative, but that it must not be forgotten that ice cream, as a source of poisoning, had in recent years become very familiar. It is possible for frozen material not to be aseptic and where toxins have already formed in such material, the freezing does not destroy them.

Premium on Filth.—Dr. Wiley, in closing the discussion, said that to permit preservatives to be used in milk is almost sure to put a premium on filth. The main element for the preservation of milk must be thorough cleanliness and then a degree of cold that keeps whatever bacteria that may be present from growing rapidly. In this matter it must not be forgotten that while the presence of such preservatives prevent the growth of bacteria, they do not neutralize the ptomains already present and that therefore much of the danger of the infected material in them as well as those from the presence of the preservative itself. With regard to *pâté de foies gras*, Dr. Wiley begged to say that the specimens so far examined in recent years by the government laboratories failed to disclose liver as a constituent of this material, which is so much in favor with the gourmet, but always showed veal present in large abundance. It is to veal in poor condition and not to any supposed tendency of the liver to disintegration that the President of the Academy may attribute his symptoms. With regard to wines, Dr. Wiley said that in order to secure a dry flavor, so much sulphate of potash and other material was employed that sometimes the wine smelt more strongly of the sulphurous fumes of the lower regions than of the bouquet from the vineyards of the hillsides of Provence or Burgundy, which it was supposed to bring with it. Notwithstanding this fact, French authorities are prone to insist on American acceptance of French wines and resented any criticism of the so-called preservatives employed for giving them a flavor which was supposed to add to their value.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held October 6, 1904.

The President, R. C. Norris, M.D., in the Chair.

The Immediate Repair of the Cervix.—Paper by Dr. Barton Cooke Hirst. He states that the above title is a misnomer, as experience has demonstrated that the intermediate repair of the cervix after the fifth day gives the best result. This fact dictates the time for the repair of all the pelvic injuries, if the cervix must also be repaired. Trachelorrhaphy can be performed with perfect success and without morbidity or mortality during the puerperium. The specialist who criticizes the operation as to safety or success, either is prejudiced or incompetent. He performed the operation in more than 150 cases at the University Hospital, and practises the procedure in his private and consulting work. The question arises, how can the community at large be offered the advantages of specialistic attention for lacerations incident to childbearing. The writer's solution is for the poorer classes to be confirned in well-appointed and intelligently-managed hospitals, and for the wealthier classes to be attended by their family physicians under the supervision of a specialist, who could deal with complications in labor, examine the patient during the puerperium, repairing whatever damage has been done, and make the final examination at the end of the puerperium. He considers that the plan is one that appeals to the general physician as practicable and desirable.

Dr. E. E. Montgomery, in the discussion, said he had listened with much interest and pleasure to the two papers upon the immediate closure of lacerations of the cervix and perineum. It certainly must be apparent to every one that the ideal method of procedure is the one which would restore the organs of the parturient woman to a condition similar to what they were prior to the occurrence of her labor. When one realizes the various sequelæ that are likely to result from failure to unite lacerations of the cervix or perineum this is still more evident. Subinvolution of the uterus, the increased size of the organ which must result where a prolonged convalescence takes place following a delivery, the increased danger of infection that is present, the long train of symptoms that arise as secondary results of such conditions make it extremely desirable that the part should be repaired at as early a date as possible. He can understand that the cicatricial changes that follow in these structures will be of such a character as to render it difficult at a later date to overcome the alterations which have occurred and to restore the parts to a normal condition. In operating he agrees with the readers of the papers as to the great importance of thorough asepsis in every step of the procedure, making sure that there is no opportunity for introduction of infection. One can understand that the possibility of infection must influence our procedure as to whether it shall be immediate, intermediate or, at a later date. If he were engaged in the practice of obstetrics he should endeavor to so practise that he would be able to repair at once injuries that have taken place. As a gynecologist, who is likely to see these cases sometime after the delivery of the patient, he should be anxious to know something of the methods of procedure of the obstetrician in attendance, prior to restoring to immediate repair of cervix, vagina, or perineum. If he knew nothing of his methods, he should hesitate about the immediate repair of such lacerations. He said he had knowledge of a number of cases of lacerations of the pelvic floor where the immediate repair was made, in which aseptic precautions had not been employed by the attendant upon the case, and in which sepsis developed, and in which it was necessary to remove sutures to give the patient a chance for recovery. He recalled seeing a case some years ago in consultation with some three physicians, and he was to decide as to the advisability of removing the uterus. On examination he found that there had been a bilateral laceration of the cervix into the lateral fornix to the peritoneum. There was laceration of the perineum to the sphincter. The perineum had been repaired with the result that the tissues were bathed with a lot of decomposing material and the woman had a high fever. Instead of doing hysterectomy he advised that the perineal sutures be removed, and the entire cavity irrigated and packed with gauze. He was called a few hours later to find the patient with a temperature of 106° F. She, however, subsequently recovered. He had seen other cases in which the immediate repair of the perineum has been followed by a large amount of necrotic tissue between the sutures, no union taking place and the necrotic tissue giving rise to danger from the absorption of the putrescent material rendering the condition perilous. Objection is sometimes made to immediate repair of the cervix from the fact that the parts are so relaxed that the sutures have to be tied firmly, and owing to the rapid involution, the parts become loosened and union does not result. The classical case spoken of by Montrose A. Pallen is well known, in which he immediately repaired a laceration of the cervix and had good union. The immediate repair of the cervix would lead in some cases—but he does not know that this is an objection—to the performance of an operation which would, with ordinary aseptic precautions, prove unnecessary. The profession knows that, in the great majority of primagravidæ, laceration of the cervix to a greater or less degree occurs. At one time, at the Philadelphia Hospital, the doctor examined every patient delivered and found laceration had occurred in every one; and, in the great majority of the cases the laceration healed spontaneously. He fully agrees with what the last speaker has said regarding caution in making proper apposition of the muscles. Such care will add very greatly to the comfort of the patient. He is fond of catgut in all plastic operations on the vagina. The acid secretion of the vagina, however, will give rise to more rapid disappearance of the catgut than is evident in other parts of the body, so that the ten-day catgut will not last that long in the vagina. He prefers the chromicized gut prepared to last twenty days. In some cases he had found that catgut prepared for a short time has been absorbed too soon and there is stretching of the parts and formation of cicatricial tissue. If the vagina and perineum are to be operated upon he would feel it absolutely necessary that the operation should include every laceration in the genital canal, that he cervix and the vaginal walls should receive prompt attention as well as the laceration of the perineum; otherwise, there would be danger to the patient from the accumulation of material in the vagina giving rise to septic processes.

Dr. John G. Clark said he had been much interested in the two papers presented this evening, for they bear upon practical subjects which have recently been discussed before the meeting of the

American Gynecological Society in Boston. If one were to designate the various times at which a lacerated cervix may be repaired he should speak of them as: first, the immediate, within a few hours after the delivery; second, the intermediate, five to ten days after confinement; and, third, the more remote, at any time after the completion of the puerperal period.

Fifth Day Repair of the Cervix.—Dr. Dickinson, to whom Dr. Hirst has referred, read a paper on his experience relative to the fifth day repair of the cervix. In general he advocated waiting five days for the repair of all lacerations of the cervix, except in the three following classes of cases: (1) Those in which there is a profuse hemorrhage from the laceration; (2) those in which there had been bilateral incisions, such as in the Dührssen operation; (3) those in which the cervix is low in the vagina and may easily be reached at the time of the perinorrhaphy. In the discussion of the immediate and more remote repair of the cervix, one must first take into account the time when injuries to the perineum are sutured. Dr. Davis, in his paper, advocates the immediate repair of the perineum under careful operative technic and Dr. Clark believes he has struck the keynote when he insists upon the latter point, for the same care should be observed in these cases as in any other surgical procedure. First, as to the wisdom of an immediate repair of the perineum. For several years the consensus of opinion has been entirely in favor of prompt attention to vaginal lacerations at the completion of parturition. When the bad surroundings are taken into consideration, under which these operations are necessarily performed and the uniformly good results following these repairs, he does not believe a general departure from this custom is justified. If under unfavorable conditions these results follow, one may expect even more perfect healing of these sounds when treated as Dr. Davis described. If it is admitted that the perineum should be at once repaired, then he can see but one conclusion, and that is that the cervix should be either immediately repaired in meeting Dickinson's primary indications, or if deferred, at a more remote day after the puerperium is completed. Certainly the primary conditions noted by Dickinson, indicating the immediate repair, are well grounded and he should unquestionably adhere to them. Concerning the five-day intermediate repair he is, however, skeptical as to its ultimate value. One sees so many cases in which healing occurs most satisfactorily when left alone that he can see no reason for reversing this almost universal observation and the teaching upon this point. If primary healing is not satisfactory the more remote trachelorrhaphy is so good, that to break into a woman's early convalescence and throw her house into turmoil six days after her labor by giving her ether and subjecting her to an operation in these early days at a time when the milk secretion is fairly established and the baby is nursing well, is not justified by the surgical exigencies of the case. It is preferable, therefore, that either an immediate repair or, in the event of delay, a trachelorrhaphy be performed at some more convenient period after the completion of the puerperium.

In the discussion of the immediate repair, before the American Gynecological Society, Clifton Edgar, and Cragin, of New York, Williams, of Baltimore, Craig, of Boston, and Wakefield, of San Francisco, all expressed opinions opposed to the immediate repair of a lacerated cervix. Cragin admitted that it might be done by skilled hands successfully, but that he could not sanction this teaching to students.

While he has no doubt that these injuries, if repaired in a well-equipped maternity hospital, will do well, yet the vast number of labors in this and all countries occur in private houses, in the majority of which there are no facilities for the more careful work required for repairing a lacerated cervix. While it would be ideal to have all women confined in maternity hospitals, or if in private houses to have an expert in consultation, the domestic environments of the parturient woman are usually such that this will never be the case, consequently one must consider these operations from the standpoint of the conditions under which they will usually be performed. Therefore, he believes that if the immediate or five-day repair were generally to be adopted, not only could the morbidity but also the mortality of puerperal cases overbalance the good which this procedure might do, if solely confined to the hands of the specialist. He considers, however, that Dr. Hirst is quite justified in carrying out this procedure in a maternity hospital, but agrees with Cragin and others that the teaching of this doctrine is hazardous. If it is the right course to pursue it should be quite fully sustained by not only the immediate but the more remote operative results, which will subsequently be reported from obstetrical clinics. Until that time this procedure will be open to discussion.

Dr. Stricker Coles said, in taking up this discussion, he wished first to speak of his own results. He has, for the last ten years, closed all lacerations of anterior and posterior vaginal walls and in the cervix, if the tear was large, immediately after labor; had not had to delay the closure in a single case for twenty-four hours, for he prepares for it before each delivery. His results in closure of the cervix have not always been good. They are better now than when he began, for then he did not appreciate fully the elongated condition of the cervix and its rapid involution. The stitches should be placed at the uppermost part of the tear, but should not be placed too far down, as the lumen of the cervix will be narrowed, and the flow of lochia will be retarded. So far he has not had any cases of infection of subinvolution, and may class the result fair with no inconvenience to the patient. His results with immediate closure of the perineum, pelvic floor and anterior vaginal wall have been most satisfactory, even when the tear was complete. The cases operated on in very poor surroundings and with very little care have done well. Dr. Davis has gone very carefully over lacerations of the vaginal wall and he can add nothing, but wishes to emphasize the importance of bringing muscle to muscle, and to do this the buried suture is often necessary to bring the retracted ends into direct apposition. The great objection to immediate closure is the swollen and edematous condition of the parts. This he tries to obviate as far as possible by watching his cases and not allowing the tissue to become devitalized by prolonged pressure. He considers the healthy epithelial cell the best barrier against sepsis and always tries to protect and to keep its continuity. He has had no experience with the intermediate closure of lacerations and will await the results of others to see whether sepsis will not be more frequent when raw surfaces are left exposed for five or ten days, also what will be the effects of an operation at this time on the mother's milk. This method

does not seem applicable to the greatest number of cases as they cannot afford to pay for this extra operation, for obstetrical cases now pay very poorly if they are properly attended. If the method is taught to students, many cases will not be closed at all, for deferring the operation for five or ten days, it will be neglected or rejected. When done immediately the operation takes a very few minutes, causes the patient no inconvenience and slight pain, and gives almost as good a result with the cervix and equally as good with the perineum, pelvic floor and anterior vaginal wall, and can be applied at home or in the hospital to the rich or poor.

Dr. E. P. Bernardy said, in regard to the immediate operation, the query has been in his mind, Why should not lacerations of the uterus be sewed up as well as lacerations of the perineum. It can be done readily. He has done it and the results have been very good, without elevation of temperature and the patients recovered with good results. In the treatment of these cases there must be created a thoroughly good field of asepsis. Needle, catgut and everything should be properly prepared, even at the bedside of the patient before being used. Under those circumstances the results will be good. He has never operated at the intermediate or five or ten-day period, but since hearing Dr. Hirst's paper he would not hesitate to do it. He thinks the patient would get along better than to run the chance of healing. Some lacerations of the cervix, as is well known, do heal, but only about twenty-five per cent.; the other seventy-five per cent. either are operated on or the patients live with lacerated cervices. Lacerations of the perineum he stitches immediately after the birth of the child. He recollects one case in which he was called in consultation in which twenty-two stitches were used in the vagina and perineum, and in which on the ninth day the patient left her bed entirely well, and without a sign in the perineum and vagina that there had been in laceration. Therefore, he thinks one ought to stitch at once. In very bad cases where the parts are mutilated and blue and black, always try to bring the tissues back to their normal condition by douching with warm saline solutions before stitching and the results will be invariably good.

Dr. George M. Boyd said that this subject is of great interest to everyone practising obstetrics. If he understands Dr. Hirst's paper, he does not believe in the immediate repair of the cervix. That is the consensus of opinion. Dr. Hirst repairs the cervix after the fifth day. Every obstetrician repairs the cervix. If it bleeds a stitch or two are put in it. It seemed to him that it would be bad teaching to tell the average family doctor, who must be an obstetrician, to sew up every cervix. As Dr. Montgomery has stated, upon examination one finds that nearly every case has laceration. The debatable point is the intermediate operation, and Dr. Boyd has not had experience with that kind of operation. The satisfactory results of Dr. Hirst, however, would tempt one to try it. He feels that it is the duty of the obstetrician to get the patient in the best possible condition before she leaves the maternities. He agrees with the doctor in that he does not believe the average maternity has been sufficiently careful in the past to bring about the proper repair of injuries after labor.

Dr. O. Hopkinson, Jr., said he thought it would be extremely unfortunate if the young graduates were instructed to repair the cervix immediately after labor. The tears, in his experience, have been bilateral and the anterior lip is much larger, edematous and more easily reached than the posterior. In one case a man without much experience in repair of the cervix after labor tried to pull the posterior down even with the anterior, and of course, tension was so great that he tissues gave way. Therefore, he thinks, that the repair of the cervix immediately after delivery is one which ought to be done by some one with experience. He thinks it safer, unless a hemorrhage confronts one, to leave it alone for five days (with which operation he has had no experience yet), or, until later on.

Dr. Theodore A. Erck said that the point in the question of the immediate or intermediate repair of the cervix is, how much is the woman going to be benefited. If every young man is taught that he should repair every laceration of the cervix immediately or intermediately, Dr. Erck believes many cervices will be repaired unnecessarily. Two of the gentlemen have spoken of the difficulty of making a good immediate repair of the cervix. The young graduate has not usually at first all the advantages of practising where the necessary aseptic detail can be carried out. Many of these men will become expert in a year or two, but how much will womankind have to suffer as a result of that operation? This should be considered. Dr. Erck places stitches for laceration of the perineum at the termination of labor. The obstetrician has seen and operated on cases in which the result of the primary repair was a failure and Dr. Erck would like to suggest the substitution of silkworm-gut for catgut in these operations so that the operator will see the result of his operation during removal of the stitches.

Dr. Richard C. Norris apologized for leaving the Chair to take part in the discussion. He said, in the first place, he thought one must consider the intermediate operation from two viewpoints: (1) Its practicability; and (2) its results. Here one must view the practice of obstetrics from its highest plane and study the question especially from the standpoint of results. Whether the operation is practicable in private practice, in the hands of the average doctor, is an open question. It has been the experience of most men in the past, that the immediate operation for laceration of the cervix, unless done for the special indication of hemorrhage, is not a justifiable one. When the intermediate repair is chosen patients examined on the sixth,seventh or eighth day of the puerperium, the cases of spontaneous healing of the cervix will be found to be pretty well advanced, and the experienced surgeon would not operate on such a case. If spontaneous healing has not occurred, he operates at this time, and those who have done this work know that it can be done successfully. Operation on the cervix after the sixth or seventh day, in Dr. Norris's own experience has been quite as successful as occurs in the later operations to which Dr. Clark referred. This question is discussed from the standpoint of what capable surgeons can do. If equally satisfactory union follows an intermediate operation, and it certainly does, what advantages can accrue to the patient by delay? Dr. Clark speaks of getting excellent union at the remote operation, but in many of the cases, while the wound in the cervix united, the uterus has undergone chronic interstitial changes, and there has been evolved a train of symptoms which often persist and would not exist, if the cervix had been repaired at an early date.

Viewed from the standpoint of results, the intermediate operation upon the cervix can be depended upon to give as good union as the remote and by the early operation one spares the patient a train of ills. That the immediate repair of the cervix is not satisfactory, is the opinion of the men who have had the widest experience; the intermediate operation can be and is a successful operation, as shown by those who have had experience with it. When one approaches the study of the best time for the repair of the perineum and pelvic floor one again has to view it from the standpoint of results. If it can be demonstrated that better results will follow an immediate operation than can be obtained by the intermediate operation, then Dr. Norris thinks it must be taken for granted that the immediate operation should be done, and the advantage of the intermediate cervix repair must be abandoned. Viewed from past experience the immediate operation has been a success. If it can be demonstrated that the operation on the perineum has no disadvantages by being delayed and that equally good results can be obtained then the combined intermediate repair of both cervix and perineum will be the ideal treatment from the surgical standpoint. This question narrows itself down to a matter of personal experience. Only those men who have done the operation are in a position to criticize it. Dr. Norris propounds these questions: Is it justifiable to allow the patient to wait? Is there added danger of infection? If the obstetrician is not surgically clean, if he has carried dirty fingers into the vagina, if he has not conducted the labor with the highest grade of asepsis and antisepsis, he had better not operate either immediately or after a few days. If he has carried infection into the woman's vagina, sewing up the perineum at once is not going to protect her. It should be determined by actual experiment whether there is any detriment to the patient to allow her perineum and pelvic floor to remain unrepaired for six or eight days. Those men who have tried it, say there is no disadvantage to the woman. There would not be so many secondary operations, if the average doctor did not neglect to at once repair these cases, and yet their patients so neglected seldom have serious infection. The severest cases of infection, as a rule, are not the ones of lacerated perineum that have been neglected. The infection is in the uterus, not the vagina. Dr. Norris is convinced that the intermediate operation has no serious disadvantage, and from his experimental knowledge, acquired with the desire to test this question, he believes there is no disadvantage in a clean case in allowing the perineum to go unrepaired for the length of time necessary to obtain good results for the repair of the cervix. As to results, he has been wonderfully surprised. One would expect that there would be failure of union, but in the cases in which he has operated, that has not been the case. A man must put his theoretical objections to the practical test before his opinion has real value. If this question is studied from the standpoints of instruction of students and what the average practitioner will do, its practical value to them is questionable, because the average practitioner and the recent graduate are not skilled operators. If he gets bad results in the primary operation he will get bad results in the intermediate. He had better do the best he can with immediate repair of the perineum and when the patient is convalescent, send her to a gynecologist for reasonably early repair of the cervix. Dr. Norris believes as time goes on the new generation of doctors will be well prepared for clean surgical and obstetrical work, and that intermediate operation on both the cervix and pelvic floor will gain in popularity with the profession. Among the more intelligent class of private patients, appreciation of the ultimate gain to the patient will offset the natural objections on the part of the patient and her family of an anesthetic and a formal operation following so closely the anxiety of the confinement.

Dr. B. C. Hirst remarked that this question cannot be decided by theorists, but only by men with large practical experience. His own experience with reference to the cervix and perineum coincides with Dr. Norris's. Until three and a half years ago Dr. Hirst believed it a bad plan to attempt too much in the way of repair, but he happened to run across Lusk's statement regarding repair of the cervix and he saw one or two articles scattered through medical literature advocating primary repair, so he determined to try it. As a result of that trial, for three and a half years, in an experience comprising more than 150 cervical operations alone in the University Maternity, besides a number in other hospitals and private practice, he is in a position to recommend the procedure. As far as the instruction of students is concerned, it seemed to him to be the duty to teach students to do the best. Fifty or sixty years ago the average practitioner was not able to use the forceps. One old graduate told Dr. Hirst that when he left the University some fifty years ago to settle in the country, he took an obstetric forceps with him, and that an old practitioner having a case of adherent placenta sent for him to bring those new-fangled instruments and see what he could do with them. He thinks that in the near future the majority of physicians in general practice will do this work well, or they will not do it at all. In the University Maternity more than 50 cervical operations are demonstrated every season, done usually at the end of the week, to a class of about ten men each, so that each man acts as assistant in about five cervical operations. It seemed to Dr. Hirst that these students ought to be prepared to do this work as it should be done. There seems to be some confusion as to why the intermediate operation should be preferred. He first thought the immediate operation was the better one and he tried it in 40 or 50 cases, but found that there was too large a percentage of fever after the repair of the cervix immediately. While it was fortunate that there were no serious or fatal cases of sepsis, there was a higher proportion of morbidity than should prevail in a well-managed maternity. After the intermediate operation this tendency is not observable.

Dr. Clark referred to the discussion before the American Gynecological Association. The mere statement of the views of the men who took part without any explanation might lead one astray. Those gentlemen who criticized the procedure adversely have never tried it. Taking this fact into consideration, one can better judge of the value of some of the remarks that were made. Dr. Dickinson is right in many particulars, but wrong in one, when he says that if the perineum must be repaired then the cervix also should be immediately repaired. There is no harm whatever in letting the perineum go to the end of a week. The man who says that, because the perineum ought to be repaired early, the cervix ought to be also, is wrong. Such an opinion is not

based on correct observation, and perhaps, not on sufficient clinical material.

Dr. E. P. Davis said he had not oberved the absorption of No. 10 catgut alluded to by Dr. Montgomery in puerperal cases. It seemed to Dr. Davis the reaction of the lochial discharge is not the same as that in the vagina of a woman not parturient. Regarding the repair of the cervix, he had had some experience and much interest in one aspect of the question, that is, in the immediate repair of the cervix; and, by "immediate" I mean within an hour after the expulsion of the child; not immediate in the sense of twelve or twenty-four hours. In a certain class of cases, the results have been satisfactory. The cases are watched through the entire labor and the tissues are not allowed to become nodular, edematous or bruised. When delivery occurred, frequently under forceps, the entire genital tract up to the internal os was inspected for lacerations. If lacerations of the cervix were found more than one-quarter of an inch, they were closed; so were lacerations of the pelvic floor and perineum. Dr. Davis has seen no fever following this style of procedure. He has seen a considerable number of very satisfactory union in the cervix, and, of course, a very high percentage of union in the pelvic floor and perineum. Those cases were in good hands and the operation was practically immediate. The so-called, intermediate, or five or seven day operations, is on trial. When that is proven to be a successful procedure he shall be glad to follow it. He sees no reason why it should not be successful in many cases, but the matter comes down, especially to his own mind, to this: Is obstetrics to be done as a makeshift, a disagreeable necessity by the practitioner, to eke out his living; or, is it to be a surgical specialty? A large number will fall into all sorts of unskilful hands, and in such hands, the least interference, the better; but, if obstetrics is to take the place of a surgical specialty, then the students will develop an individual aptitude for practice, and some will take up medical work; others will do surgical work, and those students will be competent to perform operations on the genital tract, whether it be done within an hour, in ten or twelve days or in two or three weeks, and the work will go to those men. It ought to go to them, and the sooner the better.

NEW YORK ACADEMY OF MEDICINE.

Section on Orthopedic Surgery.

Stated Meeting, held October 21, 1904.

The President, Homer Gibney, M.D., in the Chair.

Congenital Scoliosis.—Dr. Reginald Sayre presented this case. He said that the baby came to the Clinic when it was three days old, and a short time after that a photograph and also an X-ray picture had been taken of the spine, which has congenital lateral curvature. These are not seen frequently, and Dr. Sayre thought the case sufficiently interesting to present. The picture was not very good, he said, on account of the difficulty in keeping the child still. The only possible way to do this was to hold the child by the arms, and in the efforts to keep it still the lateral curvature was straightened out. The skiagraph shows very sudden angling laterally, at about the eleventh and twelfth ribs, where there is coalescence of the ribs on one side, and rather marked gaping on the other side. Dr. Sayre said he remembered showing a patient a number of years ago, before this Society, that had lateral curvature, which, according to the mother's statement, was traumatic, this baby having been a transverse presentation and apparently having suffered separation of the ribs from the costal cartilages. On the right side the lower ribs almost touched the pelvis, and the upper ribs were up under the axilla. The mother said the condition was present from the time of birth—that a great deal of force had been used at the time of delivery. In this case there is no history of similar conditions, as far as can be ascertained. This baby has a large left inguinal hernia. The baby has stretched out a good deal on its contracted side since it was first seen. Dr. Sayre had instructed the mother to manipulate the baby, stretching it out, and it had been kept in a sort of cradle on its contracted side, stretching it out. An apparatus had since been used somewhat like that employed in the after-treatment of toricollis, pressing against the head, and making pressure against the chest walls on this bulging side. (Indicating). The child's right thumb has been almost amputated by intra-uterine bands. The baby is now nine weeks old.

Dr. Homer Gibney said, the interesting feature to him had been the angular deformity with the marked lateral curvature. He had seen a number of them, but he did not remember having seen one with such marked angular deformity.

Dr. Sayre showed another case, a boy, asking for diagnosis. He came to see Dr. Sayre a couple of weeks ago, the mother stating that he had limped for a few weeks previously, and complained of some stiffness in his hip. There was pain in the left shin, apparently no atrophy, possibly slight shortening of left lower extremity; not positive about this. Symptoms more marked at present than when boy was first seen. Nothing had as yet been done in the way of treatment, as it was desired to have the boy first seen by the members of the Section. The mother said nothing wrong had been noticed about him until a couple of weeks ago, when he started to walk lame. Dr. Sayre said he made a diagnosis of something the matter with his left hip, but he thought probably he had had a fall and chipped his acetabulum, or injured it in some way which showed very little on the outside, but caused him to have a slight limp. He was very much surprised on taking an X-ray to see that the head of the femur presented a honeycomb appearance, the upper half being almost destroyed. It was astonishing to see such a slight limp, and pain for only a few weeks, and such slight restriction of motion, and yet have such an extensive destruction of the femoral head—a process which had evidently lasted many months, judging from the condition of the bone as shown by skiagraph. Dr. Sayre said he recollected a similar X-ray shown by Dr. Frauenthal years ago, of a boy who had had a tuberculous hip with an enormous abscess, and who had recovered with a certain amount of shortening, but a large range of motion, the boy running around at the time, with a very useful leg. On looking at the picture, one would have imagined the only thing to do would be to scoop out the entire joint. It looked like a large sponge in the X-ray picture. The boy had more than two-thirds of the proper motion in his joint, and with the exception of the shortening, had a very useful leg. He proposed in the present case to apply a long traction hip-splint to free the diseased femur from weight bearing.

Dr. Homer Gibney said that it seemed extraordinary to find a boy with flexion, ad- and abduction, none of the motions interfered with except slightly, but to find an X-ray showing destruction of the head of the bone—the appearance of a coxa vara.

Dr. Myers said, in regard to the case of congenital scoliosis that he had never seen such a marked case. These cases were rare and the few he had seen had proved very difficult to correct. It had taken a good many years. In this case the lateral deviation was very marked, but the rotation very little in comparison. He asked Dr. Sayre his opinion as to the possibilities of the curvature of the spine having been produced by injuries.

Dr. Sayre said he would suppose it was quite possible there may have been some intra-uterine disturbances, the right thumb was amputated by an intra-uterine band, in all probability, and there may have been some other bands which caused the marked deformity of ribs and vertebræ. It is not at all the ordinary type of lateral curvature one sees in later years, but a wedge-shaped condition of two vertebræ, causing an abrupt twist in the spine with little rotation, leaving the child partly broken in two. The mother says it was a more or less difficult birth, but no instruments were used.

Dr. Myers said, in regard to the second case, boy with injured hip, that he thought there was some limitation of every motion except flexion. It certainly was most remarkable to find such good motion and function with such extensive destruction of the upper half of the head. This erosion, together with the lessened inclination of the neck, must represent a shortening of three-quarters of an inch, which has been entirely compensated for elsewhere, as there is no shortening by measurement from anterior superior spine to interior malleolus.

Hallux Valgus.—Dr. Sinclair Tousey presented this case, with X-ray pictures of that and other cases, and read a paper describing this operation.

Dr. Sayre, in the discussion, said he had been very much interested in the case of hallux valgus, and congratulated Dr. Tousey on the very good result. In looking at the pictures, it seemed to him it is generally seen in these cases that it is not really a hypertrophy of the head of the first metatarsal bone so much as a subluxation of the phalanx on the metatarsal bone, and theoretically he imagined that a division of the ligaments and replacing of dislocated bone would be the better operation. So far as he knew, no one had done this, although for the past six or seven years it had been suggested at various meetings. Before the days of X-ray photography the projecting subluxation of the head of the metatarsal bone was supposed to be an exostosis. Until it is looked at in the X-ray picture, one would imagine there was simply an abnormal distance between the first and second metatarsal bones, and subluxation oft he first phalanx on the first metatarsal bone. The practical results of the bone operation leave nothing to be desired. He had done operations on cases somewhat after the manner described by Dr. Tousey, and the results had been so good that he had not tried replacement of the subluxation after division of ligaments, although theoretically it would seem to him to be required in these cases. It has been found more sensible to utilize the abnormal articulation by cutting the bone behind the articulative surface, as Dr. Tousey has done.

Dr. Myers said that Dr. Keller, in the *New York Medical Journal*, of October 15, spoke of the dangers of destroying the tripod of the foot; the resulting deformity, weakness and painful callosities were as bad as the original condition. Excision of the head of the metartasal bone would cause the loss of the inner support, so he recommended the excision of the base of the first phalanx instead. In the case presented by Dr. Tousey, there was very good support on the inside, there was no pain and no fatigue in walking, so the objection mentioned did not apply to the operation he described. Dr. Myers had operated by this method, and the results had been satisfactory. Valpius (*New York Medical Journal*, October 8, 1904) said Weid had, in a number of such cases successfully transposed the extensor tendon to the inside of the great toe.

Case of Multiple Exostoses.—Dr. Myers presented this case, with skiagraph. R. F., twelve years old. His mother and her sister have exostoses on their tibiæ. Patient has two healthy brothers. There is no history of injury or muscular strain. There are large exostoses upon or near the epiphyseal lines at the lower ends of both femora, tibiæ, fibulæ and radii, at the upper extremities of both humeri, tibiæ and fibulæ, also at the junction of rib with cartilage anteriorly of the second rib left, and seventh, eighth and ninth on right. The tumors are multiform, nodular, like ridges or spiculæ. They have only been noticed for two or three years, and while growing have not as yet interfered with function. They are painless.

Dr. Sayre said, in the discussion on Dr. Tousey's cases, that cases of congenital injury were to him very interesting. They have been described as congenital dislocations a number of times, but all those that had come under his personal observation had apparently had fractures associated with the dislocation. Those cases do not seem like congenital dislocation of the hip in that respect, and the results of treatment that he had had or seen in the hands of others, have not been remarkably favorable. Several cases he had seen reported at the societies did not seem to him to be very much improved as to range of motion after operation compared with range of motion that he had seen in them prior to the operation. He had recently endeavored to reduce one by manipulation, and thought he had improved the child very materially at that time, but since removing the dressing, he thought he had not noticed a great gain; although the position of the head in relation to its glenoid cavity was improved, he did not think the range of motion materially increased over what the child had when the head of its humerus was articulated in the new glenoid it was excavating for itself behind the original one.

Dr. Tousey said that in radiographing the spine the light was above the abdomen, the patient lying on the back, the X-ray tube being directly over the median line of the body and over the center of the plate. He thought one reason for his success in getting the detail of the spine was that he had the patient in a position similar to the lithotomy position, which obliterated the hollow of the back and brought the lumbar vertebræ in contact with the photographic plate as well as the dorsal and sacral portions of the spine. In addition he made use of a "board compressor" of his own device, thin enough to be perfectly transparent to the X-ray, placed flat across the abdomen and strapped down so as to

press upon the abdomen and make the thickness of tissue three inches less than that which the X-ray would have to penetrate without this appliance.

In reply to a question by Dr. Sayre, Dr. Tousey said that the plate was exposed exactly two minutes.

Dr. Twinch said that Dr. Osgood, of Boston, in endeavoring to get a good picture of the spine, hit upon the plan of pressing a tomato can very heavily into the abdomen, in that way getting a very good detail of the spine.

Dr. Homer Gibney said, the Chair would like to compliment Dr. Tousey and say as to operations on hallux valgus that he had the pleasure of meeting Dr. Tousey this summer, and asked him to read a paper and show cases before our Section, and then narrated a case on whom the same operation had been done, except that the speaker usually used the lateral incision, and found a lot of hypertrophied tissue—bunion—he excised that, then closed the wound, using a pad between the first and second toes. A number of these cases had been done with most gratifying results. The shoulder case was interesting. One is at a loss to know just exactly what to do with these shoulders injured at birth or during labor; they are numerous at Clinic or Dispensary, and, as Dr. Sayre truthfully says, great trouble is experienced in their management and the results are not brilliant. Dr. Tousey said, in closing the discussion, that Dr. Jäger was right about the result immediately after operation being a better looking foot than it is some months later. This patient's last foot was operated on five months ago, so the present result is probably a permanent one. Dr. Tousey said that he could, however, see, on recalling the looks of the two feet immediately after the operation, that they have decidedly deviated from the straight line. At the time of the operations, he had those two toes in an absolutely straight line with the metatarsal bones. In regard to the possibility of straightening such feet without a bone operation, he had experimented some little time on the feet by traction, measurements, and so on, to see if any division of the soft parts would promise a better result, but he found that the ligaments, etc., were so short that he had to divide some of them even to accomplish the rectification which he had accomplished. Combined with osteotomy, he had to make a slight incision in the fibrous tissue. The man stands on his feet eighteen hours a day, handling baggage. He is one of the fellows that break our trunks, etc., at the Grand Central Station, so that the functional result for the present is certainly very good and according to the outlook bids fair to be permanent

Dr. Homer Gibney exhibited an apparatus devised at he Forty-second Street Hospital by one of the staff, for the application of spicas, single and double. We all know how difficult it is to get the shoulders and hips on the same plane, and this is a little scheme of his, to overcome the difficulty. It can be altered according to the size of the child, and length of limb. The apparatus is used at the Dispensary every afternoon, and it is used in private practice. It is giving general satisfaction. Dr. Eickenburg, the designer of the apparatus, is at present in Chicago, assisting Dr. Ridlon. It is a very simple device—a modification of the Lorenz hip rest. It is made in the shop at the hospital. It has been in ure for some time now and promises to give excellent results.

BOOK REVIEWS.

The Principles and Practice of Gynecology. By E. C. Dudley, A.M., M.D., President of the American Gynecological Society; Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, etc. Fourth Edition. Lea Brothers & Company, Philadelphia and New York.

So much has been said in praise of the previous editions of this excellent gynecological treatise that the last edition might well be accepted on trust. The grouping of the subjects has almost without exception met with the unqualified approval of teachers and students. The usual manner of grouping all the diseases of some special organ in one part has not been followed, but the author has treated the various subjects from the standpoint of pathological and etiological sequence. The main subjects are grouped under four heads: (1) Infections and Inflammations, (2) Tumors, (3) Traumatisms, (4) Displacements. In this classification the author has well emphasized the functional unity of all the reproductive organs, and allowed a study of pelvic diseases in the combined forms they ordinarily assume. The first section of the book is devoted to general surgical and gynecological principles set forth in careful detail, an essential to the student, a valuable reminder to the surgeon. A special chapter is devoted to the disorders of menstruation and sterility. The entire volume is abundantly illustrated, and is to be commended in that the surgical instrument catalogue element has been eliminated. It has evidently been the author's aim to show the instruments as they appear in actual work. All important manipulations and operations have been illustrated to show the steps of the various procedures. The work is thoroughly practical, based largely on clinical experience and in the main conservative. The volume in general supports the author's claim that it is suitable both for students and practitioners, although it is perhaps unwise to make a universal statement to the inexperienced that the occasional use of the intrauterine sound or dilator may stimulate the menstrual flow without a word of warning, as has been done in the chapter on amenorrhea. The wisdom of the author may also be questioned in that he states that adhesions and contractions of a retroverted uterus may be stretched or broken by manipulations without mentioning the dangers of breaking up adhesions out of view or the possibility such a procedure might have of injuring diseased adnexa. The small number of personal cases cited is a pleasing feature of the book.

Physician versus Bacteriologist. By Prof. Dr. O. Rosenbach, of Berlin. Authorized translation by Dr. Achilles Rose. Funk & Wagnalls Company, New York and London.

In this somewhat controversial discussion we find an excellent summary of the pros and cons of the bacteriological doctrines.

The author's chief theme seems to be that an undue proportion of attention is given to bacteriological methods and not enough to ordinary clinical methods. We cannot see that the points brought out are of much real value at the present time—but they place the readers *en rapport* with the attitude of the skeptic of ten to fifteen years ago.

The work will repay reading by the overenthusiastic laboratory worker who would neglect the patients for the microscope and test tube, and there are many excellent features of the book apart from its argumentative and disputatious undertone.

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ORIGINAL ARTICLES.

THE IMMEDIATE REPAIR OF THE PELVIC FLOOR AND PERINEUM.[1]

BY EDWARD P. DAVIS, A.M., M.D.,
OF PHILADELPHIA.

WE may for clinical purposes accept the division of the pelvic floor into the anterior and posterior segments. Lacerations of the anterior segment are not infrequent in proportion to those of the posterior segment, occurring in about the ratio of one to three.

The attention of the obstetrician is usually drawn to this accident by the occurrence of hemorrhage. When the uterus is well contracted, when inspection of the cervix reveals no laceration with bleeding, and when torn vessels in the posterior segment of the pelvic floor are not bleeding, persistent hemorrhage is caused by a laceration of the vulva or anterior segment of the pelvic floor. Upon inspection, a positive diagnosis is readily made, when such lacerations are detected extending into one or both sulci, externally near the urethra or internally behind the symphysis pubis. The detection of these injuries high up upon the anterior vaginal wall behind the symphysis may be difficult. Following the bleeding which accompanies such tears, the operator will come upon the source of the loss of blood. In extreme cases these lacerations may threaten the urethra, and may be complicated by tears in the veins in the vulva from which severe hemorrhages may occur.

The treatment of this condition may be expectant or by serre-fines or by suture. Where infection is absent, small lacerations in the anterior segment will heal without apparent injury. If such lacerations are of considerable extent, the important fascia of the pelvis will be torn and prolapse and dislocation of the urethra and vaginal wall will result. The treatment by serre-fines is unsatisfactory and has been employed chiefly in foreign hospitals. The primary closure of such injuries by fine or medium-sized chromicized catgut under antiseptic precautions gives satisfactory results. With the patient in proper position and with good light, there is rarely difficulty in closing these tears. We must be careful, if the tear extends near the urethra, to avoid injury by suture. Where extensive lacerations high up occur, it is often impossible completely and accurately to close the entire laceration. One or two sutures of medium-sized catgut buried deeply enough to include the fascia will be of great service in preventing prolapse. While applying sutures, if the operator is annoyed by oozing from the cervix, uterus or pelvic floor, the vagina may be temporarily tamponed with gauze. Where the laceration extends near the urethra, a sound or catheter may be placed with advantage as a guide to the passage of sutures.

Lacerations of the posterior segment of the pelvic floor naturally divide themselves into tears of the pelvic floor and those of the perineum. The diagnosis of perineal tears is readily made by inspection, but the recognition of injuries to the pelvic floor requires especial care in exposing the deeper tissues. Where injuries are severe, blood may clot in deep tears of the pelvic floor, giving to the examining finger the sensation that the vaginal wall is intact. To make a thorough examination and diagnosis, the patient must be placed upon the back or side at the edge of a bed or table, the labia separated and the pelvic floor raised for inspection. This may be accomplished by the use of tenacula, or, more conveniently, by placing the longest finger of one hand covered by a rubber glove in the rectum and raising the pelvic floor by this finger. The other hand may use sponges and antiseptic solution, removing accumulated blood and exposing the full extent of the tear. Such injuries are rarely accompanied by considerable bleeding, as the vessels, if torn, retract readily. The extent and importance of lacerations of the pelvic floor must be estimated by the presence or absence of injuries to the deep fascia and the sphincter of the bowel. By thoroughly exploring the parts, the operator will be able to detect the extent of these lacerations.

Lacerations of the posterior segment may be closed immediately or after some delay. If the tear be considerable and the condition of the patient bad, the operator may wisely delay such repair for twenty-four to thirty-six hours. It must be remembered that we cannot accurately foretell the length of time required to repair lacerations. If the patient is greatly exhausted and the conditions are unfavorable for rapid work, it will be much wiser to delay until the patient has obtained rest and the conditions are favorable.

No considerable tear of the pelvic floor can be satisfactorily repaired with the patient upon a low bed and in a poor light. The patient should be placed upon a table or high bed in a good light, and sufficient assistance obtained to give the patient the care necessary for an important surgical operation. Partial or complete anesthesia is often necessary, and even if such be not employed in the beginning, it may be required before the end of the operation.

[1] Read before the Obstetrical Society of Philadelphia, October 6, 1904.

Sterile instruments, sterile gauze and suture material, antiseptic solutions, stimulants for hypodermic use, sterile appliances for the operator and at least one thoroughly competent and experienced nurse are required. The patient's limbs may be supported by assistants, or more conveniently by a sheet or sling passed beneath the neck, over the shoulders and tied about each leg on the outer side above the knee. If this be properly applied, the limbs are well retracted, the knees and thighs rotated outward and the patient placed in the most convenient posture for operation.

The most important stitches in closing lacerations of the pelvic floor are those placed at the highest points in the tears in the sulci. Considerable difficulty may be experienced in placing these stitches, and a fully curved needle is usually required to pass them. They may be placed one-eighth of an inch from the upper end of the tear, and should extend sufficiently deeply to pass through the connective tissue and fascia lying beneath the mucous membrane of the vaginal wall. After the first, stitches may be placed one quarter of an inch apart until the pelvic floor has been brought together and evidently raised toward its original position. At this point, the operator may with advantage turn his attention to the tissues near the sphincter of the bowel. If the muscle has been torn, it should be brought together by one or two fine catgut buried stitches. Where the muscular tear is extensive, fine catgut may be used for the muscle only. In all cases, muscle and connective tissue should be brought together by a firm and carefully applied stitch. There is no objection to using several stitches, provided the catgut be not too large and the stitches be properly placed.

Next comes the repair of the perineum, beginning nearest the anus and bringing together the skin edges and underlying fascia with silkworm-gut stitches, taking a considerable portion of tissue but without tension. The perineum should be closed up to the point where the posterior vaginal wall begins. No effort should be made to repair the fourchette, as bringing together the tissues in this region too closely will produce a pocket favoring the retention of lochia. When the perineum has been closed, a few stitches may be required in the lower portion of the pelvic floor. These should be of catgut and complete the repair. In this operation a perfect result may not be obtained from one of several errors in its performance. If the pelvic floor sutures are continued upon the perineum, the posterior wall of the vagina will be brought downward and a prolapse of the vaginal mucous membrane will result. If stitches are drawn tightly, especially those in the perineum, they will cut. If sufficient tissue be not taken in stitches, a superficial union only may occur.

In complete tears, the rectum may first be closed by continuous suture of No. 1 chromicized catgut prepared to last ten days, the stitches passed into the connective tissue, turning the mucous membrane into the bowel. A careful approximation will turn but little mucous membrane into the intestine and secure a good application for the stitches. The fascia and sphincter muscle of the bowel may then be accurately closed and then the pelvic floor and perineum as in an incomplete tear.

Several sorts of suture material are in use for this operation. Chromicized catgut prepared to last ten days, No. 2, has given good results in the sulci of the pelvic floor and where but one stitch was required in the fascia and muscle of the sphincter of the bowel. For closing the anterior segment of the pelvic floor and the rectum, No. 1 catgut of the same sort has been useful. In the skin perineum, silkworm gut has given satisfaction; occasionally two weeks catgut chromicized has given good results with great comfort to the patient. Sutures may be tied or shotted, silkworm-gut sutures having the ends left long and tied together to prevent irritation. From its ready adaptation to the tissue, silk would be an ideal suture for the skin perineum were it not for its unfortunate tendency to further the burrowing of bacteria in producing stitch abscess.

Complications may follow the performance of this operation. Hemorrhage usually ceases when stitches are tied. Should it persist, pressure may be applied upon the perineum by a firm pad of gauze, and a gauze tampon may be used in the vagina. Very rarely the operator may be obliged to take out stitches or to twist or ligate bleeding vessels. Hemorrhage after this operation is fortunately of rare occurrence. Infection is not of great rarity and may occur independently of infection in the uterus or a general septic infection. Thorough asepsis prevents this complication in most cases and the avoidance of strong bichloride solutions is a matter of some importance. The mucous membrane of the vagina should be injured as little as possible by antiseptic applications. Bichloride solutions need not be stronger than 1/4,000 or 1/6,000, and lysol one per cent. or normal salt solution are efficient upon mucous membrane. If the operator brings the tissue in good apposition without empty spaces, he does much to prevent the development of infection. The posterior vaginal wall should not be brought together through the fourchette as lochia may be retained and decompose in the pocket so formed. Just before stitches are tied, the parts may be flushed freely with antiseptic solution. In complete tears, the free use of salt solution on the mucous membrane of the bowel, tends greatly to prevent infection. Sterile and bichloride external dressings, prompt and thorough irrigation of the stitches in complete lacerations when the bowels move or the bladder is emptied are all essential. Tearing out of the stitches is a complication sometimes seen where the patients suffer con-

siderable pain after the operation or where the stitches have been brought together too tightly. For pain the use of opium will usually prevent the tearing out of stitches. If stitches have been brought together too tightly, a wound may sometimes seen where patients suffer considerable pain after the operation or where the stitches. Where there is great edema, the application of hot sterile compresses or irrigation with hot sterile salt solution may be useful. A wound is sometimes imperiled by the stitches catching in the dressings. If silkworm-gut stitches be brought upward to one or other side when dressings are applied, this accident is usually prevented.

In the presence of infection, the stitch at the site of infection must be removed as soon as possible and the parts thoroughly irrigated with an antiseptic solution. Vaginal douches should be avoided in these cases because of the danger that the douche may carry infective material from the perineum upward to the cervix. It is an interesting obeservation repeatedly made that puerperal septic infection by uterine or constitutional infection may develop while wounds in the perineum and pelvic floor heal by primary union.

The after-treatment of these cases consists of surgical cleanliness so applied as least to disturb the tissues and parts which are healing. We prefer the use of antiseptic solutions by pouring rather than by spraying or sponging. Small metal pitchers of convenient size are readily obtained which can easily be boiled and from which the antiseptic solution desired may be poured over the parts. They may then be dried by cotton or frequently require no drying, as the vulvar dressing soon removes the excess of fluid. The use of the catheter after this operation should be as brief as possible, and after two to three days in the most extensive cases its employment should cease. If the tissues be thoroughly irrigated with normal salt solution or any dilute antiseptic after the bladder is emptied, no harm will follow spontaneous micturition. The old custom of locking up the bowels after these operations has largely passed away. After complete tears, the rectum may be kept quiet to advantage for forty-eight hours and after that daily movements of softened fecal matter should occur. By thorough saline irrigation of the stitches and rectum such movements will not cause complications. Very rarely do the patient's limbs require restraint and only in extensive lacerations where the patient is restless when she wakes from ether. The removal of silkworm-gut stitches may take place from the seventh to the fourteenth day, while catgut requires no removal. Very rarely the knots of catgut stitches remain indefinitely to the patient's annoyance, but such are easily removed by irrigation or by a pair of dissecting forceps.

After the operation for complete tear, fistulæ may remain between the vagina and rectum for some time. Fluid may pass between these cavities and the operator may be disappointed in the failure to obtain complete union. If care be exercised in aseptic precautions and saline flushing, these fistulæ will close spontaneously and their presence will delay but slightly the patient's convalescence. After the stitches have been removed, and before the patient is allowed to take active exercise, she may assume the knee-chest posture twice daily to advantage in cases where the uterus is larger than normal and where a tendency to prolapse of the vaginal walls is present. The average patient after such an operation, where union occurs without infection, is convalescent in from three to six weeks. In cases where but partial union occurs, so soon as the first stitches have been removed a good result can often be obtained by curetting thoroughly the unhealed parts of the laceration and by inserting stitches a second time.

In estimating the success of an immediate operation the vaginal walls must be completely or nearly in apposition and without prolapse. There must be good control of the sphincter of the bowel and the patient must be free from pain, especially when using a closet or commode or when moving about. There must be no considerable vaginal discharge coming from the sutured tissues. Observation has shown that complete union of the perineum is much less important than that of the pelvic floor. If the pelvic organs are in good position without prolapse, the vaginal walls in apposition without prolapse and the patient has good control of the bowels without pain, a practical cure has resulted, although union in the perineum may not have been complete.

RECENT ADVANCES IN SURGERY.[1]

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While surgery has to report no epoch-making discovery of recent date, many improvements have been made on some of our older methods.

For treating *congenital fistula* of the *neck* König advised first mobilizing the fistula by dissection to a point above the digastric. It should then be liberated by the finger to a point close to the mucous membrane of the mouth by dissecting bluntly, the oral cavity being kept wide open by a Whitehead speculum. A curved probe is now introduced into it through the wound to a point very close to the tonsil. Then the mucous membrane of the oral cavity is incised and a silk thread fastened to the external end of the fistula. Now the mobilized fistula-tract can be pulled into the oral cavity, where it is fastened to the wound margins of its mucous membrane. The projecting part of the fistula is then removed.

The connection between the integument and

[1] Read at the Annual Meeting of the American Therapeutic Society, June 3, 1904.

the fistula is thus cut off, and the remainder of the latter simply represents a harmless opening in front of the tonsil. The same method can be utilized in blind internal fistula.

The use of the *bronchoscope* for extracting foreign bodies has proved to be extremely valuable. Garel, of Paris, reports the case of a young woman who, three months previously, had aspirated a steel pin with a glass head. Kilian's bronchoscope was introduced through a tracheotomy opening, and by its aid the pin was seen, point upward, in a bronchial tube of the third order. It was extracted by a forceps. (The bronchoscope is much more useful after several skiagraphic exposures have been made. Ref.)

One of the most remarkable advances of recent date is represented by *Sauerbruch's air-*

Fig. 1.

Recurrent sarcoma of leg four months after operation. (See nodule in right gluteal region.)

chamber, which eliminates pneumothorax in intrathoracic operations. This is done by excluding the atmospheric pressure during the operative procedure, thus preventing collapsing of the lungs after being opened to the air. In a lower animal Sauerbruch opened the thorax on both sides, and removed sternum and ribs without seeing the respiration interfered with in the slightest degree. The Sauerbruch chamber is air-tight. Its size permits of the presence of surgeon, assistant, patient, and operating table. The head of the animal may project outside, while a rubber-cuff is tightened around his neck. Regulation of the air pressure is done by an air pump, a valve in its wall permitting the entrance of a sufficient amount of air to keep up continuous negative pressure inside the chamber. Professor von Mikulicz and his assistant, who did some work inside of the air-chamber for an hour, did not suffer any discomfort. The chamber is composed of boards, which are lined with tin, soldered at the corners. The roof is made of glass.

ABDOMINAL SURGERY.

In the surgery of the *biliary passages* many valuable contributions were received. The admirable work of Kehr and Mayo deserve special attention. One of the remarkable events was the successful removal of the aneurism of the hepatic artery by Kehr.

Interest in the various types of appendicitis and the technical steps of appendectomy is still undiminished, and it is interesting to note that American doctrines are more and more adopted in Europe as far as the pathology of the vermiform process is concerned.

Many of these European surgeons who used to ridicule the "American hyperactivity" are now enthusiastic advocates of early interference in appendicitis, and this number is growing larger from day to day.

In order to facilitate operative procedures in the *hypochondriac* and *epigastric* regions, Marwedel tried to turn up the rib-arch, considering that the rigidity of the thoracic margin interferes with the access to the superior hepatic surface. The same applies to the lower portion of the esophagus and to the dome of the diaphragm. The *modus operandi* is as follows: By a curved incision, running parallel with the costal margin, and extending from the xiphoid process to the tenth rib, the abdominal wall is divided. The rectus muscle as well as the external oblique are separated from the internal oblique and the transversalis. The cartilage of the seventh rib now comes in view, and is divided at its sternal junction. In the same manner the junctions between cartilages and bone of the eighth and ninth rib are exposed, and divided by blunt dissection. By retracting the loosened portions of the ribs and the soft tissues over them over the chest, access is now gained to the hypochondrium.

The same principle of procedure can be utilized on the left side for approaching the cardia and the upper part of the stomach.

The disturbance caused by *adhesions* and *peritoneal bands* have recently received more thorough attention. Lejars, the excellent French surgeon, has made a special study of these important conditions, which frequently show their clinical manifestations by vague functional disorders, only so that they may not be recognized. The patients are often regarded to be neurasthenics. Later pain may be a predominating symptom, and finally, even strangulation may be produced. Sometimes after an apparently slight abdominal injury vomiting, pain, colicky attacks and symptoms of obstruction may turn up. Exploratory laparotomy will clear the situation, and

detaching or excising the constricting bands will promptly remedy the disorders. Lauenstein and Gersuny have also published similar experiences. The symptoms observed by the various authors were either gastric, intestinal or pelvic. The impression was always that there was some obstacle in the intestine and that painful distention took place above the obstacle. Medication was always unsuccessful. These cases frequently simulate chronic constipation, enteroptosis and pelvic neuralgia. Sometimes they were, as the autopsy table showed, taken for ulcer or carcinoma of the stomach, or cholelithiasis.

The principles observed by Mayo in his *pylorectomies* are also noteworthy. Of his 41 cases, 37 were performed for carcinoma and four for inveterate ulcer. His steps are the following: "After opening the abdomen doubly ligate and divide the gastric artery, then ligate and divide the necessary amount of gastrohepatic omentum close to the liver, leaving most of its structure attached to the stomach. Doubly ligate and divide the superior pyloric artery and free the upper inch or more of the duodenum. Then with the fingers as a guide underneath the pylorus, in the lesser cavity of the peritoneum, ligate the right gastro-epiploic or gastroduodenal artery, and progressively tie and cut away the gastrocolic omentum distal to the glands and vessels up to the appropriate point on the greater curvature, and here ligate the left gastro-epiploic vessels. Then double-clamp the duodenum purse-string, divide between with the cautery, leaving one-fourth inch projection. With a running suture of catgut through the seared end the duodenum is closed as the clamp is removed, a purse-string suture about the duodenum enables the stump to be inverted. The proximal end of the stomach is double-clamped along the Mikulicz-Hartmann line and divided with the cautery, leaving one-fourth inch projection. Suture through the seared stump with a catgut button-hole suture. This is again turned in after removal of the clamp by a continuous silk or Cushing suture. Finally follows independent gastrojejunostomy."

The value of *subcutaneous feeding* in such disturbances of the gastro-intestinal tract, in which nutrition by mouth or rectum has become impossible or is contraindicated, is proved by Friedrich, who injects 40 to 100 grams of grape-sugar in a three per cent. solution *per diem*. Recently he also tried the pure pepsin-peptone, free from albumoses. A useful combination consists of two grams of grape-sugar, two grams of table-salt and four grams of pepsin-peptone to 100 grams of water. Especially in very severe disorders, like perforation of the stomach or intestine or severe peritonitis subcutaneous feeding is apt to tide the patient over the critical period. (Ref.—Can verify the correctness of this statement by his own clinical experience.)

Similar good results were obtained by Credé in using a meat preparation which contains soluble albumin in a readily assimilated form, 95 per cent., and traces of iron and salt, two per cent. This preparation, called kalodol by him, resembles the albumin in the circulation. This explains why it is so easily assimilated. About four kalodol injections *per diem* suffice for a patient. Rectal injection of kalodol may also be resorted to, as it is easily absorbed.

Chaput is in favor of performing capital operations on the abdomen under local *cocaine anesthesia*. He resorts to general anesthesia only when the patient is timid. He performed gastro-enterotomies, appendectomies and hysterectomies, under cocaine anesthesia.

To intensify the resistance of the peritoneum against infection, von Mikulicz advises the internal administration of acid of *nuclein*, which is supposed to increase the number of the leucocytes, thus rendering bacteria innocuous.

Fig. 2.

Metastatic nodules of thorax, abdomen, face and arms.

In *suppurative peritonitis* Küster places the patient in the abdominal position, in order to facilitate the discharge of the exudate from the area of operation.

Kapsammer's observation, that the *freezing point* of the *urine* may be influenced by reflex polyuria from catheterization of the ureters, is noteworthy. The results of this new method should, therefore, be taken *cum grano salis*. In one of his cases of renal tuberculosis, for instance, there was five per 1,000 albumin, and the freezing point of the urine was 52° C., while that of the blood was 58° C. Despite this fact

nephrectomy was performed, the albumin disappeared and the patient recovered. Kapsammer pleads for catheterizing both ureters in order to arrive at a correct diagnosis, and is also in favor of employing the phloridzin and methylene blue functional tests as well. One case of tuberculosis of the bladder was cured by the local use of bichloride of mercury in combination with guaiacol-iodoform. In bilateral tuberculosis it is often found that a slightly affected kidney recuperates after the removal of the diseased mate.

On the basis of 79 cases of osteomyelitis and 108 osseous tuberculosis, von Mostig-Moorhof recommends *filling* up *osseous cavities* with *iodo-*

Fig. 3.

Metastatic nodules in the back, face and arms.

form. In some cases of osteomyelitis of the tibia he removed the tibia in its entirety and filled the resulting defect with his "Iodoform-plombierung." As is well known, iodoform is not absorbed by dead bone, but only when it is reached by the new growth of osseous tissue. Thus absorption of the iodoform takes place so slowly that the danger of intoxication is small. The process of healing can be studied by skiagraphy.

While many interesting experiments have been made on the *carcinoma* question, nothing new has been derived from them. Doyen claims to have isolated a bacterium, which he calls the *Micrococcus neoformans.* He obtained vaccines and toxins from it. He has treated 126 cases so far, 21 being cured and 47 improved. In 58 patients there was a negative result. Eight months of cultivation are necessary for the production of an effective toxin. So far Doyen's observations were not corroborated by other investigators.

The observation that epithelioma may be produced by continued exposure to the Roentgen rays is not in favor of bacterial origin, but of the irritation-theory (Ref.).

Literature upon the application of the *Roentgen rays* in surgery has increased remarkably. The representation of renal calculi has become a reliable method in the hands of the expert. Reports on the successful skiagraphy of biliary calculi have also become more frequent. The therapy of fractures is much simplified and perfected since the Roentgen guide shows the true nature of the conditions. Irreducible fractures are now operated upon early instead of waiting for the development of a conspicuous deformity, which at a late stage cannot be corrected as well as at any early period of the injury.

The knowledge of the various diseases of the bones has been much augmented, and new laws of differentiation between inflammatory, syphilitic, tuberculous or osteomyelitic processes, and osteoma, osteosarcoma and osseous cysts have been established.

The indications for the therapeutic utilization of the Roentgen rays have become clearer and great efforts are made to keep facts and conjectures well apart. While there are many encouraging results reported in some malignant diseases, utopistic views should not be held, and it must always be kept in mind that this new and delicate field is still in a stage of development. The *radium* has become a competitor of the Roentgen rays in this respect, but, while it has some advantages over the Roentgen rays, as a whole, it has so far proven to be of limited practical importance. Its undoubted advantage over the Roentgen rays is, that it can be placed into mucous cavities, like the nose, esophagus, stomach, uterus, urethra, etc. The small size of the radium tubes also permits of imbedding them within the tumorous tissue through an opening made by puncture.

The radium treatment may also be tried in cases in which the Roentgen ray treatment has proved to be unsuccessful. As a diagnostic means the radium in its present form cannot be used in practice.

The *Finsen method,* ingenious as it is, can, in its present state, not compete with the Roentgen treatment. It should, therefore, be resorted to in cases only in which the Roentgen ray or radium treatment has proved to be unsuccessful.

A variety of new and useful apparatus were invented, among them the compression-diaphragm, the various skiameters, the osteoscope, and the non-penetrable glass apparatus of Kohl, which shield the operator, may be mentioned.

What may sometimes be done with the Roentgen rays is illustrated by this lady (demonstration) who was presented in this room two years ago, shortly after operation. She showed the first signs of sarcoma of the orbit nearly three

years ago. Enucleation of the eyeball was undertaken, but recurrence in the frontal bone took place three months thereafter, and finally reached such an extent that it was regarded inoperable.

After having ascertained the extent of the growth by skiagraphic exposure, I removed the diseased bone portions. Three weeks thereafter, when cicatrization had taken place, irradiation was begun three times a week, exposing the patient ten minutes each time. No change was observed during two month's treatment. But when irradiation was stopped for three weeks, the signs of recurrence again appeared, the vicinity of the orbit projecting far. Now Roentgen irritation was resorted to every day at small distance, low vacuum and high current being chosen. After eleven exposures extensive dermatitis developed, which proved to be of the ulcerative type, within the center of the irradiated area. At the same time complete alopecia of the diseased side set in. The patient suffered considerably for a week, then the symptoms gradually subsided. The treatment first consisted in the application of Burow's solution, and in the use of xeroform gauze later. Three weeks after the beginning of the vehement dermatitis all signs of the sarcomatous infiltration had disappeared, especially the projection, and the general condition of the patient improved remarkably. With few intermissions light Roentgen treatment (twice a week) was kept up until to-day, that is, two years after the operation. There is still a slight projection in the orbital region, which, however, appears to be composed of normal tissue. It is interesting to note that the scar produced by the incision, has completely disappeared after the dermatitis. So, instead of disfiguring the patient, the burn has in this instance served as a beautifying agent. Whether or not a recurrence will take place in this case cannot be determined; still, after the lapse of two years this does not seem to be probable. The general condition of the patient is undisturbed. Of course we must not generalize from one case. There are cases of sarcoma in which the Roentgen rays show no inhibitory action at all, while others of the same variety react at once and markedly.

Clinical experience indicates that the results in round-cell sarcoma are better than in the other types. Other factors are to be considered, too; for instance, the general composition of the growth and the region. My experience shows a larger percentage of improvements in sarcomas of the face than of the extremities.

Of course, whatever can be reached by the surgical scalpel should not be left to the rays, the latter to be employed largely after operation or in inoperable cases.

As a counterpart of the favorable case just demonstrated, this case of a man, aged fifty-eight years, may serve. His history reveals that two years ago he noticed a hard swelling above the right gastrocnemius muscle, which was painless at first; but after having slowly increased in size, there was considerable discomfort while walking.

A year ago I made an extensive extirpation of the growth, which at this time had reached the size of a man's fist, at the Post-Graduate Hospital, removing a considerable portion of the gastrocnemius muscle at the same time. Three weeks afterward Roentgen treatment was begun, but the patient became negligent until four months after the operation a recurrence formed in the scar (Fig. 1).

Irradiation was taken up then for a short period, during which about a hundred metastatic nodules formed on his trunk, face and extremities (Figs. 2 and 3).

Microscopical examination, made by Dr. Henry T. Brooks, showed the presence of round cells. The patient begins to present the signs of cachexia now. He is taking Fowlers' solution, but nothing seems to arrest the metastatic process.

THE INFLUENCE OF THE FIRST AND SECOND DENTITION PERIODS IN THE ETIOLOGY OF EPILEPSY.[1]

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It is my conviction that we are never justified in looking upon the convulsions of infancy and early life as harmless manifestations.

Numerous convulsions appear at this period that begin as benign and end as such. But thousands begin as benign that end in established epilepsy. The fact that many infantile convulsions do not pass into epilepsy grants us no license for regarding such convulsions as innocent of future harm.

I am led to make this statement after ten years' experience at The Craig Colony for Epileptics, during which time it has been my privilege to study the etiology of epilepsy in nearly 2,000 cases.

It would be tedious to attempt to recount the times I have questioned the parents of epileptic children and studied in conjunction with the information thus derived the medical testimony in the case along this line.

Parents very commonly answer questions concerning the probable cause of the disease in their child, and the age at which the first convulsion appeared in this way: "Yes, my child had convulsions as a baby. They came on before the end of the first year. I was told that they were 'teething fits' or 'worm' fits or 'stomach' fits, and that they would go away of themselves after a while."

To a certain extent such prophecies are true. Convulsions that appear in connection with the

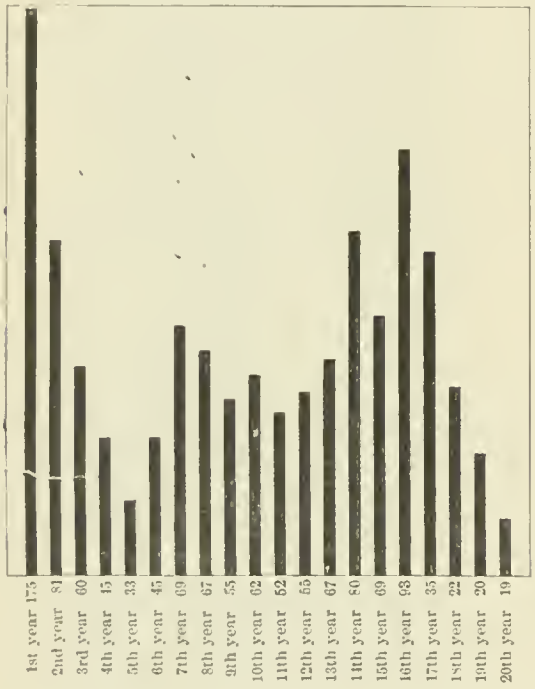
[1] Read before the Section on Pediatrics, New York Academy of Medicine, October 13, 1904.

first and second dentition do often disappear entirely for years, only to recur at some future time when the child is passing through a period of physiologic stress, particularly like the stress of the epoch of puberty.

The lesson we often fail to learn is *the necessity for constantly recognizing in such children the presence of the convulsive tendency.* To keep the child free from convulsions in the future, this tendency must be borne in mind and always respected.

The question I particularly desire to discuss before you to-night is whether difficult dentition alone or acting in conjunction with a previously prepared organism is capable of causing convulsions that may pass into epilepsy.

Chart 1.



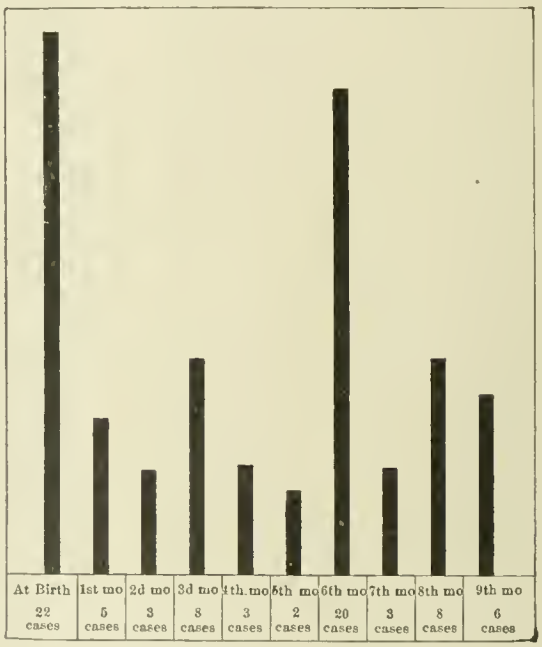
Showing the age in years at which epilepsy originated in 1,215 cases. Note the rise during the six, seven and eight years, coincident with the second dentition period.

The evil effects of dentition when it departs from physiologic lines, apparently do not now have the recognition that was given them some years ago. Many physicians of the present day deny *in toto* that "teething" ever causes convulsions that may pass into epilepsy. From this view I dissent. I have long felt that in selected cases the "stress" of difficult dentition is the touch-stone in the causation of convulsions. Unfortunately, few epileptic children are placed in colonies or institutions especially designed for them until they are confirmed epileptics. This fact denies to investigators in such institutions the opportunity of studying the incipient stages of epilepsy.

For some years I have been studying the age at the onset of epilepsy in several thousand cases, to determinate what proportion of them acquired epilepsy coincident with the first or second dentition periods. The results of these studies so impressed me with the undoubted influence of such periods in causing, or helping to cause, this disease *in selected cases,* that I am pleased to lay the main facts that I have ascertained before you, hoping that your experience and discussion may throw more light on a problem about which there is now much obscurity.

I show you first Chart No. 1, that gives the age for each year at the onset of epilepsy in 1,215 cases from the first to twentieth years inclusive. These 1,215 cases, all under twenty years of age, represent 80 per cent. of all patients admitted

Chart 2.—First Dentition.



Showing the age in months at which epilepsy originated in 80 cases. Note the increase at the sixth month, which marks the beginning of the influence of the first dentition, that is, the period when the teeth begin to cut through the gums.

to The Craig Colony up to the time these figures were made.

The next point to which I call your attention is the large number of cases during the first year of life—175, equal to more than 14 per cent. of them all.

After passing the first year there is a very decided and continuous decline up to and through the fifth year, there being 33 cases only in that year, or about one fifth as many as during the first year.

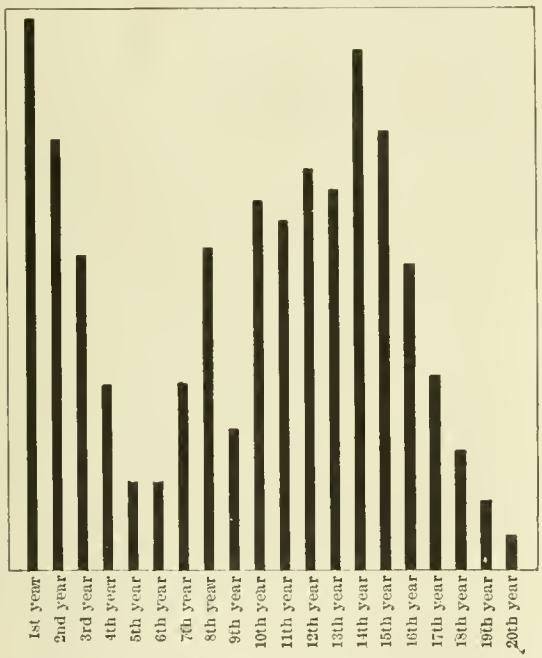
After leaving the fifth year we enter upon the period of the second dentition, and we are struck at once with the decided rise in the number of cases during the sixth, seventh and eighth years: 45, 69 and 67, respectively, the number dropping to 55 during the ninth year.

The remainder of Chart 1, while of great interest in showing the very marked influence of the epoch of puberty in both sexes in causing epilepsy, is of no particular interest in our present studies; except, I will repeat the important fact that so-called "teething convulsions" which disappear early are quite apt to recur under the stress of the twelfth to sixteenth year period.

Now we will return to the first year which embraces the first dentition period, and note the number of cases arising each month from birth up to and including the tenth month.

Chart No. 2 shows this in 80 out of the 175 cases mentioned in the first year of Chart 1. In the remaining 95 cases, the exact month of origin being in some doubt, they were not considered.

Chart 3.



Showing the age in years at which epilepsy developed in 3,523 cases. Note the greatest number during the first year, the increase during the seventh and eighth years, and the still greater increase during the epoch of puberty.

The first column in Chart 2 shows that epilepsy was present in 22 out of 80 cases, or 27½ per cent. of them all "at birth;" the second month shows a decline to five, the decline continuing through the third month when three cases only occurred. A notable increase takes place during the fourth month, followed by a second decline through the fifth and sixth, after which a very positive rise is noted during the seventh month. 20 cases in all occurring during that month—equal to 25 per cent. of the entire number.

The fact of importance about the rise during the seventh month is that it marks the beginning of the influence of the first dentition period, *i.e.*, the period when the tooth usually begins to cut through the gums.

Chart 3 is made from a grand total of 3,523 cases in all of whom epilepsy developed before the twentieth year; these 3,523 cases constituting about 80 per cent. of the 4,358 studied preliminary to making up this table.

Here the greatest number for one single year was 376 and was during the first year.

All these, in brief, may be ascribed to congenital causes, to heredity, to birth accidents, and to the first dentition. Passing the first year a continuous decrease is noted through the second, third, fourth, fifth and sixth years, when 127 cases only out of 3,523 occurred. Here again the seventh year shows an increase to 168, this increase continuing through the eighth year and reaching 174. After this a fluctuating rate is noted until the twelfth year when the stress of puberty begins to be felt. The four years that cover this developmental period show a vast increase in the number of cases—a grand total of 877 out of 3,523 occurring during these four years.

The fourteenth year which marks the acme of the influence of the period of puberty, stands second in the number of cases for one year periods, there being 258 cases in that year as compared to 376 during the first year. Passing the epoch of puberty the decline is sharp and continuous; so much so that by the time the twentieth year is reached, the time has passed during which more than eight-tenths of all cases of epilepsy occur.

Before citing specific cases that illustrate the influence of the dentition periods in causing epilepsy, I will give the opinions of some leading neurologists on the point in question.

Gowers says: "It is convenient to group the infantile causes of epilepsy into three classes: First, those in which labor was protracted and difficult, or (seldom) premature and swift, in which the symptoms, immediately after birth, suggest some meningeal hemorrhage. Second, cases in which the attacks begin by a severe fit or series of fits, with indications of a local cerebral lesion. Third, cases (which constitute the majority) in which the infantile fits are at first slight and are associated with retracted development, especially manifested by backward teething. The largest group is the third,—the cases in which epilepsy dates from the convulsions called "teething fits." In about two-thirds of the cases beginning in infancy, particulars of which could be ascertained, the fits arose from such so-called "dentition convulsions." It seems legitimate to ascribe to the same cause a similar proportion of the cases respecting which no information was forthcoming. If so, we have a total number of cases due to this cause which constitutes 7 per cent. of all the cases investigated."

Voisin states, "Epilepsy is especially a disease of infancy and of the young. It may come at birth, but usually it is at the time of dentition that the first manifestions occur. In these cases dentition is the touch-stone of hereditary predis-

position. Then at the age of seven or eight the attacks recur with the second dentition.

Feré says: "Epilepsy may appear in connection with dental disturbance. The frequency of convulsions in young infants during dentition is well known."

Graeme M. Hammond says: "I have records of several cases in which convulsions, due to dentition, were followed by true epileptic convulsions."

Peterson says: "I recall a number of cases in which epilepsy was due to the convulsions of dentition."

Clouston says: "I have seen the convulsions of dentition followed by prolonged delirium, ending in idiocy, or in true epilepsy, or insanity of adolescence."

Jacobi says: "Every convulsion ever so slight may produce cerebral hemorrhage with all its possible results,—epilepsy, idiocy, paralysis, and insanity."

Dr. Jacobi, in this connection, apparently did not mean that the convulsions referred to were due to dentition.[1] He did admit, however, that the spasms and convulsions of infancy are serious manifestations, and if allowed to go unchecked may lead to explosions of genuine epilepsy, and later on to insanity.

In reviewing the etiology of convulsions in children, Sachs[2] has this to say: "Of the influence of two conditions there can be no reasonable doubt. The first of these is dentition; the second, gastro-intestinal irritation. There has been some question whether a tooth about to cut through the gum can cause a decided eclamptic seizure.

Delayed dentition is so frequently associated with rickets that the latter condition is considered by many to be the chief factor, and this I believe to be true; but convulsions do at times occur in children who present no tangible signs of rickets. Moreover there is good reason why a cutting tooth should produce convulsions in a child so disposed, say by rickets, or any form of exhausting disease. "The cutting tooth" is a direct irritant to the filaments of the trigeminal nerve, which carried this irritation easily enough to the convulsive centers at the base of the brain. I have little doubt of this special reflex origin of convulsive seizures since observing in the adult the occurrence of severe epileptic paroxysms in a case of trigeminal neuralgia.

I could easily bring scores of cases to your attention in which epilepsy followed convulsions that appeared for the first time coincident with the first dentition, but I will report three or four only.

Case I.[3]—At five months of age a little girl had a severe attack of enteritis that lasted a week, and was attended by "several severe convulsive seizures in every respect like those met with at this age in similar conditions." After recovering from the enteritis she had no further trouble until the first tooth was cut at the seventeenth month, when "she began having convulsive seizures very frequently, often several in a day. Anger or freight always acted as the immediate excitants of attacks. At such times she held her breath until she became very much congested about the face and chest, when the seizures would begin,—first as tonic, then as clonic spasms, and lasted about three minutes, consciousness being entirely lost, and post-convulsive stupor lasting for several hours."

When the case came to my knowledge there had been no attacks for a year, the father stating, "Troubles that would have brought on a convulsion a year ago, seem now to have no unusual effect on her."

This case is quite typical of its kind. In the absence of any unfavorable heredity, this little girl may have no further seizures. Nevertheless, she should be watched with the utmost care during the second dentition, or during the eruptive fevers, should she have any of them, and especially should be watched during the critical epoch of puberty. Had the first convulsion from which she suffered caused a cerebral hemorrhage, as it might readily have done, she would unquestionably have become a hemiplegic epileptic; and furthermore, had she not been obliged to run the gauntlet of the iritation incident to the first dentition, which, owing to a developmental fault, was delayed, it is not likely that she would have had any convulsions after the attack of enteritis had subsided.

It is clear that the irruption of teeth in this case incited the second series of attacks.

Case II.—G. F. (female). Admitted to the Craig Colony in May, 1904; family history bad; mother had "spasms" when a child, and "periodic headaches throughout her life,"—the "spasms" occurring at the first dentition. Father alcoholic. Patient's birth was normal in every respect. No illness of any kind up to the sixth month when *the first convulsion appeared coincident with the cutting of the first tooth.* The second convulsion followed a week later, after which they regularly appeared at the rate of two to four a month. At first they were petit mal, but later changed to grand mal; invariably affecting the right side more than the left.

At the age of seventeen years she is a confirmed epileptic with attacks that average ten a month. Her mental condition is greatly impaired. She is subject to violent outbursts of temper, and occasionally commits unpremeditated assaults upon those about her. All her attacks grand mal, and all are severe.

In this case there is no room to doubt the establishment of genuine epilepsy as a result of convulsions incited in the first instance by dentition.

Case III.—W. A. W. (male). Admitted to the Craig Colony June 7, 1904; epilepsy then of

1 "Causes of Epilepsy in the Young," Medical News, December 13, 1902.

2 Nervous Diseases of Children, 1895.

3 This case was reported to me by Dr. W. L. C., the patient being a member of his family.

eighteen years' duration. Family history unsatisfactory. Father a marked inebriate for twenty years. Patient had no convulsions at birth. Was well developed and healthy in every respect up to the ninth month when the first "spasm" appeared, coincident with the cutting of the first tooth, several occurring in quick succession, and all being severe. Two weeks later they recurred, when they caused a cerebral hemorrhage which resulted in left hemiplegia. Attacks from the first of the grand mal type. Mental condition characteristic of true epilepsy. Eighteen years after onset of the "spasms" in this case, epileptic attacks regularly occurred at the rate of four to ten a month. In this case it is equally as clear that the apparently harmless "spasms" or "convulsions" due to the first dentition later on caused essential epilepsy.

Case IV.—P. A. K. (male). Admitted to the Craig Colony when twenty-one years of age; epileptic since the eighth month. Family history bad. Father a habitual drunkard. Nine children in the family. Six of them had "teething convulsions," one girl dying at the ninth month while in such "spasms." Patient's birth normal. No trouble until the eighth month when first convulsion appeared with "the first set of teeth he cut." This convulsion was severe, lasting twenty minutes. At four years of age he had "a convulsion that lasted forty-eight hours," and which was followed by "paralysis so that he crept for a year before he could again walk." His palsy is still marked seventeen years after its onset, while his attacks of grand mal that appear daily are extremely severe.

Cases V and VI.—I. J. and A. J., sisters, members of an epileptic family. Paternal grandfather and father had epilepsy, the disease appearing in the latter when he was twenty-six years of age, the immediate exciting cause being alcoholism. The father inherited a predisposition to epilepsy, and might have escaped the disease had he carefully guarded his epileptic tendency; but his habits brought it to light.

The two patients, in question, inherited epilepsy from the father, or at least so strong a tendency to it that the slightest irritant was all that was required to bring it into full development. The elder daughter reached the twelfth month when she began having "teething spasms." She had been perfectly well to that time. The younger daughter passed through an almost identical experience. She weighed eight pounds at birth, was well developed and normal in every respect. She also had "teething spasms" at the twelfth month, and from these naturally passed into a true epileptic. I say she naturally did this, because under such an unsatisfactory heredity, and the etiologic factor in question, no other outcome was to be expected.

The father and two daughters were admitted to the Craig Colony in August, 1904; one daughter being fourteen, the other eleven years of age; both having severe grand mal attacks on an average of one to three times in twenty-four hours. All of them bear marked evidences of the stigmata of epilepsy.

It is always a mistake, in my opinion, to regard the convulsion of dentition, or the convulsions due to any other cause in early life, in any other than a serious light. They are never positively benign, at least we have no right to regard them so. That infants who have convulsions escape serious consequences in the future is always a matter for congratulation; but the physician should never assume that this is the outcome to be expected. When disease tendencies are so strongly marked as these morbid manifestations so plainly indicate, the most constant care and treatment should be undertaken at once in every case with a view to preventing epilepsy, or idiocy, or insanity, or other states of degeneracy destined to destroy the mental life of the individual in question.

In conclusion, my views in the matter may be briefly summarized as follows:

1. Difficult dentition, *i.e.*, the piercing of the gums by the tooth may, in suitable subjects, constitute a sufficient irritant to cause convulsions.

2. In suitable subjects these convulsions may ultimately lead to epilepsy.

3. By suitable subjects I mean infants who inherited a neuropathic tendency to disease; whose parents had epilepsy, or insanity, or who were alcoholic, or suffered from some other general vice that could be transmitted to the offspring in some form capable of vitiating its powers of resistance to disease.

4. I do not believe that difficult dentition alone in a child who inherited no ancestral taints, and who at its birth is free from a tendency to nervous disease, can cause epilepsy.

5. Great caution must always be exercised to lay the true cause in cases of this kind where it belongs; for the reason that gastro-intestinal disorders, the sequelæ of the eruptive fevers and other factors common at this age, may produce similar results.

THE CARE OF FRACTURES FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.

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ALTHOUGH this subject might seem to have been worn threadbare, the indulgence of this assembly is asked while their attention is drawn to several instances where obscure fractures have caused considerable annoyance to the attendant physician as well as to the patient, and in a few instances the present existence of both would have been far more pleasant if the difficulty had been properly recognized and treated.

Of all the trials that come within the scope of a physician's labor, it can safely be said that fractures cause him the most trouble. These injuries often appear to be trivial, but as time

passes and the patient is still annoyed either by pain or loss of function, friends persuade him to seek another practitioner and he often receives some indiscreet advice, and in the end such cases usually lead to the courts. This situation is most embarrassing, and while the law only expects the physician to do his duty, it is the jury that in most instances is called upon to decide whether he has done it. At such a trial, just as the case was given to the jury, a lawyer who was defending a physician once said he knew the case was won "if there was not a man on the jury who owed a doctor bill."

Although such occasions are rare, the liability of such occurrences would be decidedly less, if in cases of fracture the proper precaution was always taken.

The older text-books advise the administration of an anesthetic in all injuries the nature of which is the least obscure, but this method has been superseded by the X-ray, which is safer and far more reliable, giving a graphic description of the exact amount of damage.

It would seem improbable that such injuries as fracture of the femur and dislocation of the shoulder would lead to error, yet in the last year two of the former and three of the latter have been seen and in all but one of these cases the deformity will be permanent.

A less disastrous mistake, and one that often happens, is the neglect to recognize a green-stick fracture. Such an error, however, is not likely to lead to any serious consequences, though the patient is made more comfortable when the proper dressings have been applied. A most troublesome class of fractures occur about the joints, commonly at the wrist, elbow, shoulder or ankle. In these cases only a small fragment of bone is torn off and is often bound so firmly by the ligaments that the ordinary signs of fracture are absent, thus concealing the true nature of the injury. These injuries are often treated as sprains, and when the thickened process is noted after the acute swelling subsides, it is supposed to be due to inflammatory débris. In institutions where all such injuries are systematically examined by the X-ray, this fact has been substantiated. Such injuries will cause more inconvenience to the patient, owing to the involvement of the joint, than do fractures of the shaft of the long bones with considerable displacement.

A demonstration of these facts is well illustrated in the following series:

In the case of Mrs. S., where the posterior portion of the radius was broken off, although a fracture was suspected, the signs were quite obscure. This might have been on account of the swelling, although it was more likely to be due to the firm ligaments. It can easily be seen how a good radiograph, in such an instance, would be more satisfactory than the examination of the part under the influence of an anesthetic. The amount of displacement of the fragment can easily be seen in the radiograph made shortly after the injury, which gives a clear conception as to the exact amount of damage. In the second series of radiographs, made several months after the injury, very little evidence of the original displacement remains, although at this time the patient still suffered considerable inconvenience from pain and loss of function.

It is interesting to compare this group of radiographs with those of Miss J., where the fracture of the radius was transverse and about three-quarters of an inch above the wrist-joint. If it were not for the fact that the styloid process of the ulna was also broken off, except on close inspection the injuries would appear to be the same, although the last case had the deformity typical to such an injury.

Another radiograph shows a rather unusual injury, occurring in the case of Master X., where the fracture existed just below the epiphyseal cartilage and, like the first case, was very annoying both from the standpoint of diagnosis and treatment.

Just here it would be well to call attention to the difficulty experienced in correctly interpreting radiographs of children when the injury exists in the neighborhood of the joints. It is a good rule, where it is possible, always to take the sound counterpart in exactly the same position and compare the relations in the two pictures.

In the foregoing cases it is easily seen how two of them could have been mistaken for sprains, althought he severity of the symptoms might attract attention for further investigation. On the other hand, a fracture, such as occurred in the case of Mr. S., would be entirely overlooked; in this instance the man suffered very little inconvenience, either at the time of injury or during treatment.

It is interesting to compare the last two radiographs with the series of the first case, where so far as can be seen, the result is perfect, although at that time it will be remembered the patient still suffered considerable inconvenience; in this last group there is evidence of considerable thickening of the bone, while the patient suffered very little pain.

The annoyance that results from fracture cases in most instances may be attributed to a faulty conception of the location and extent of the injury, although at times the failure to obtain good results might be due to the treatment. In two instances that were lately seen, ugly deformities were due to a method of dressing which may be good in theory, but very bad in practice; namely, after the bone is placed in position or "set" the dressings are applied, and then they are allowed to remain on for three or four weeks; if in that time they become loosened, as they sometimes will from the subsidence of the acute swelling, a new bandage is simply wrapped around the old dressings. This is an extremely dangerous procedure and one that should be condemned, as it will always give a poor result.

In conclusion, it might be stated that too much care cannot be given to our fracture cases, and where doubt exists as to the nature of the injury, it is best to clear up the mystery immediately and not wait until the bones become united and leave a deformity that lasts the remainder of the patient's life. It is not always possible to obtain results that are most desired, but these unfortunate instances would not be so common if in all cases the proper precautions were taken.

A NEW METHOD FOR STAINING THE CAPSULES OF BACTERIA: PRELIMINARY COMMUNICATION.

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ALTHOUGH many methods for staining the capsules of bacteria have been devised, the opinion seems to be almost unanimous that they are for the most part very variable and unreliable in their results. Not this alone, but also the difficulty of differntiating the encapsulated Diplococcus from similar lanceolate organisms, especially of the streptococcus type, led the writer, early in May of this year, to devise a procedure which would enable the bacteriologist to identify the *Diplococcus lanceolatus* with greater ease and precision.

The recognition of the encapsulated organisms in the very first cultures taken from exudates, when for any reason their demonstration in the exudates themselves is impossible, is of prime importance. It is in this particular regard that the method advocated fills a want left by the older procedures.

By it capsules can be obtained not only in exudates but also on certain culture media. The configuration of the capsule of the pneumococcus, when recently isolated, and on certain media, differs from that produced by the methods employed heretofore, and from that of other organisms in so characteristic a manner that the diagnosis of the organism becomes a comparatively easy matter.

The older stains present the capsule as a diffusely staining, poorly outlined, elliptical band immediately surrounding the diplococcus. With my method it has the following features: There is a refractile, deeply staining, regularly outlined, narrow, elliptical capsule membrane, separated from the diplococcus by a clear area of capsular substance which either remains unstained or takes a faint color. Each of the other encapsulated organisms thus far studied has its own peculiar type of capsule. The *Bacillus mucosus capsulatus* shows a broad mucoid envelope with an easily destructible membrane, the *"Streptococcus mucosus,"* one of similar nature, and some strains of the pyogenic streptococcus shows only a fine linear envelope.

The Method.—The necessary solutions are as follows: (1) Müllers fluid (bichromate of potassium, 2.5 grams; sulphate of sodium, 1.0 gram; water, 100 c.c.) saturated with bichloride of mercury (ordinarily about 5 per cent). (2) Beef, human or other blood serum diluted with an equal amount of normal salt solution; or ascitic or pleural fluid. (3) 80 to 95 per cent. alcohol. (4) Tincture of iodine, U.S.P. (5) Freshly prepared stain; anilin water gentian violet, made up as follows: Anilin oil 10, water 100, shake, filter and add 5 c.c. saturated alcoholic solution of gentian violet; or, 10 per cent. watery fuchsin (*i.e.*, saturated alcoholic solution of fuchsin, 10.0, water 100.0). (6) Two per cent. watery salt solution.

Technic.—The culture is thinly and carefully spread over a perfectly clean cover-slip by means of a drop of diluted serum.[1] Just as the edges begin to dry the fixing fluid, solution No. 1, is poured on, the cover gently warmed over the flame for about three seconds, rapidly washed in water, flushed once with alcohol, and then treated with iodine for one to two minutes. The iodine is in turn thoroughly washed off with alcohol, and the specimen dried in the air. Staining for two to five seconds, and washing with salt solution completes the procedure. The specimen is mounted in the salt solution and ringed with vaselin.

Sputum and pus can be stained in a similar manner, the addition of serum being unnecessary, except in very mucoid, stringy purulent exudates.

The method depends therefore upon the rapid fixation of the bacteria while still alive and when spread in a medium which prevents dissolution of their capsules. The Müller's fluid, saturated with bichloride of mercury (*i.e.*, Zenker minus acetic acid), which is found ready in every laboratory, has given the best results. However, a simple saturated solution of bichloride of mercury in one-half per cent. salt solution has also been tried, but hitherto has given less distinct pictures. The results obtained by the use of other fixatives will be reported on at a later date.

Thin spreads can be obtained by first emulsifying the culture in a drop of serum on a separate slide. It is of importance to thoroughly rid the specimen of iodine. The preliminary alcohol wash before the iodine steep is not absolutely essential. The whole procedure, taking some two minutes, can be much shortened by reducing the action of the iodine to thirty seconds. This is accomplished by flushing several times with fresh iodine. Thus a good preparation can be finished in about one minute.

As for the stain, watery fuchsin also gives good results. Double staining by means of gentian-violet and fuchsin is also feasible. Good permanent balsam mounts can be made from these double stained specimens. Methods for making all mounts permanent are now nearing completion and will be given in detail in a future publication.

The questions of the occurrence and variation

1 Hiss: Centralblatt für Bact., etc., 1902, XXXI, p. 302.

of the capsules of different organisms on artificial media, of changes in morphology, and of the differential diagnosis between the pneumococcus and streptococcus by means of this new technic. I will reserve for discussion in a future paper. The results obtained warrant us in recommending the method to the consideration of the bacteriologist and clinical microscopist.

A NEW CASE OF CHLOROMA WITH LEUCEMIA, WITH A STUDY OF CASES REPORTED SINCE 1893.

BY GEORGE DOCK, M.D.,
AND
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(Continued from Page 1084.)

Marrow from Tibia.—Sections show a fatty marrow containing small, irregular islands of tissue exactly like that of the sternal and vertebral marrow, consisting of cells of the "large lymphocyte" type with a high proportion of mononuclear eosinophile cells of varying size and shape. In such islands the normal marrow tissue is entirely replaced. They contain but few red blood cells, and nucleated red cells are extremely rare. From these islands irregular cords of similar cells extend onward through the distended capillaries and blood spaces between the fat cells, the cords becoming smaller as the distance from the main island increases. The appearance is that of a growth extending from the center out into the neighboring tissue through the blood and lymph spaces. This growth is not at all uniform and in many of the capillaries between the fat cells the dilated lumen may be packed with red cells, few cells of the lymphocyte type being present. In such blood spaces nucleated red cells are occasionally seen, and a few bone-marrow giant cells are also found. Neutrophile myelocytes are also more common than elsewhere. Portions of the fatty marrow appear fairly normal with small collections of apparently normal red marrow, but even here the prevailing type of cell is the large lymphocyte. Eosinophiles are not so numerous in these areas.

Smears of the marrow from the tibia show more red blood cells and fewer eosinophiles than the smears of the sternal or vertebral marrow. The red cells are pale and show a greater or less irregularity of size and shape. Nucleated reds are less rare. The prevailing type of cell is, however, the "large lymphocyte." Few of these have any protoplasm, and the majority of the nuclei contain vacuoles. The background contains many free eosinophile granules.

Spleen.—Sections show a diffuse hyperplasia, both cellular and reticular. The distance between the trabeculæ is increased. The follicles are almost entirely absent, being represented only by scattered small collections of lymphoid cells around some of the small arteries and the trabeculæ. The increase in the fine reticulum of the pulp is well marked; the blood spaces are obliterated or contain few or no red cells. The spaces of the reticulum are filled with cells that are chiefly of the large lymphocyte type, a very large proportion being eosinophiles. In many fields the number of esoinophiles is greater than the non-eosinophiles. Many neutrophile myeloctyes are also present, and the number of polymorphonuclears and small lymphocytes is greater than in the bone-marrow. On the whole, the pulp presents a distinctly myeloid character except for the absence of red cells and giant cells. The small follicles are made up almost wholly of small lymphocytes and contain very few cosinophiles or none at all. There is no infiltration of eosinophiles or of other cells in the connective tissue of the trabeculæ; as a rule, the cosinophiles stop sharply around the border of both follicles and trabeculæ. A very striking feature of the sections of the spleen is the fact that while the splenic arteries are empty, or contain many cells of the large lymphocyte type, the veins are distended with red blood cells with a relatively small number of white cells. Of the latter the polymorphonuclears and cells of the lymphocyte type are in preponderance.

Lymph Glands.—In general the sections of the lymph glands present a cellular hyperplasia, large numbers of cells of the "large lymphocyte" type infiltrating the lymphoid tissue and replacing to some extent the cells of the latter. The degree of infiltration varies in different glands. In some the "large lymphocytes" are found chiefly in the sinuses and in the medullary cords. Germinal centers are rare. Eosinophile cells are found in large numbers in association with the "large lymphocytes." They are chiefly mononuclear, and resemble the eosinophile cells found in the bone-marrow and the periosteal infiltration. They are also present in large numbers in the connective-tissue trabeculæ, particularly near the hilum of the glands. The number of cosinophiles varies, however, in different glands. In the case of the glands taken from the thymus region the cellular infiltration is very marked. In the greenish gland from this region the lymphoid cells are to a large extent replaced by large lymphocytes, the trabeculæ are farther apart than normally, and the sinuses are wholly or partly obliterated. No germ centers were found in it. In the lymph sinuses of the majority of the glands there is a distinct proliferation of both the endothelium and the reticulum, the reticular spaces being filled with large endothelial cells, "large lymphocytes," and cosinophiles. Numerous degenerating cells are seen. The same appearances suggesting both amitotic and mitotic division are found here as in the periosteal infiltrations and the bone-marrow. In the majority of sections there is no evidence of an infiltration of the capsule or of the tissues about the gland. In some instances, however, there is an infiltration of cells of the "large lymphocyte" type extending through the capsule and into the surrounding

adipose tissue. Such infiltrations are not, as a rule, marked, but bear in general the same character as those found elsewhere.

Hemolymph Nodes.—In the hemolymph nodes from the retroperitoneal region there is a similar diffuse cellular hyperplasia or infiltration of cells of the same type. Germinal centers are absent; the lymphoid tissue is replaced to a greater extent by myeloid tissue of the same nature as that found in the spleen. Numerous mononuclear eosinophiles are present, and great numbers of these occur also in the sinuses and in the connective tissue of the trabeculæ and capsule. The blood sinuses are nearly obliterated and contain but few red cells; there is a reticular and endothelial proliferation, in the meshes of which lie "large lymphocytes," mononuclear eosinophiles, endothelial cells, etc. Phagocytes containing red cells and pigment are fairly numerous in some nodes, but on the whole are greatly diminished. Neutrophile myelocytes are occasionally found, and a few giant cells with large, deeply stained, knobbed nuclei resembling those of the bone-marrow were also seen. In some nodes the greater part of the lymphoid tissue is replaced by a cellular tissue, resembling in all respects that of the sternal and vertebral marrow and the periosteal infiltrations. Such new-formations are analogous to metastases, the surrounding tissues being somewhat compressed and infiltrated. The general picture is that of a gradual replacement of the tissues of the lymph node by the new atypical "lymphocyte" tissue. As a rule such proliferations appear to begin in the sinuses and not in the lymphoid follicles or germinal centers, the latter being latest involved. In those nodes showing such proliferations the atypical cells of the peripheral sinus infiltrate the capsule and pass beyond it into the surrounding adipose tissue. Such extensions beyond the capsule are not in any case marked. Large numbers of eosinophiles occur in the infiltration of the capsule and the adipose tissue. A large proportion of the cells replacing the lymphoid tissue consists also of eosinophile cells. In some nodes the number of eosinophiles is very great. Numerous degenerating lymphocytes are also present. In all of the hemolymph nodes the large lymphocyte cells are most numerous in the blood sinuses. The picture presented is that of a proliferation of these cells beginning in the sinuses and not in the lymphoid tissue.

Lungs.—The sections of the lungs present small areas of emphysema and atelectasis, but the alveoli in general are in a state of moderate distention. Anthracosis is slight or moderate. The larger vessels are distended and filled with white cells, the great majority of which are mononuclear and of the large lymphocyte type. They are of the same variety as those seen in the periosteal infiltrations, bone-marrow, spleen, etc. Eosinophiles are not so numerous as elsewhere; in some vessels but very few are found. As a rule the arteries are more distended with cells than are the veins. The capillaries of the alveolar walls are likewise distended and filled with cells, the majority of which are large mononuclears or large lymphocytes. The general appearance of the sections is that of a leucemic lung. Scattered everywhere throughout the lung are small groups of islands of closely crowded cells, the majority being mononuclears of the "large lymphocyte" type. While many of these islands are in the immediate neighborhood of the large vessels, and undoubtedly in some cases occupy the site of the peribronchial lymph nodes, the majority show no such relations.

There are all possible transition stages between very small collections of cells lying upon the alveolar walls to larger masses filling several alveoli. In these larger masses the alveolar walls directly involved are ruptured or destroyed, the collection of cells filling up and distending several alveoli. Mononuclear eosinophiles are numerous in these masses, but occur to a less extent than in the other regions described above. The majority of the masses consist apparently of free cells; no reticulum can be made out. In some cases the outlines of the alveolar walls included in these cell masses are wholly lost, and there is apparently some fibroblastic proliferation extending into the group of cells, giving it something of a reticulum. The alveolar spaces about many of these small masses contain blood, sometimes also fibrin, and desquamated epithelium. In other parts there are collections of cells containing more polymorphonuclear forms and surrounded by areas of edema and hemorrhage. In these areas the smaller bronchi are filled with cells, the majority being polymorphonuclear. It is evident that such areas are to be interpreted as foci of bronchopneumonia. In the pleura there are present very small groups of mononuclear cells, filling distended capillaries and infiltrating somewhat the neighboring tissues. In general the picture presented by the lung is that of a leucemic condition with infiltrations of cells which are proliferating after the manner of tumor cells.

Heart.—This was preserved as a museum specimen by distending and hardening whole. No microscopic examination has yet been made.

Liver.—Many sections present the appearance of a leucemic liver, the intralobular capillaries being filled with cells, and the islands of Glisson's capsule in many places showing a cellular infiltration. These changes, however, vary greatly in degree in different parts of the organ. As a rule the liver lobules are somewhat smaller than normal, and the islands of Glisson's capsule relatively increased. There is no actual increase of connective tissue except in certain areas where the infiltrated capsule shows also a fibroblastic hyperplasia. The liver cords are atrophic in some areas, and the intralobular capillaries distended, and in many places crowded with cells of the "large lymphocyte" type. The central veins are dilated and in some instances also contain masses

of similar cells. In the cells of the central zone of the liver lobule there is an abundant, yellowish-brown, granular pigment which does not give the iron reaction (hematoidin). The cells of the peripheral zone contain a moderate amount of brown, finely granular pigment which does give the iron reaction (hemosiderin). In some lobules fat drops are also present in the cells of the peripheral zone. The liver cells on the whole show a slight degree of fatty degeneration. While some islands of Glisson's capsule show a marked cellular infiltration, others show little or none. The cells of the infiltration are of the type of the "large lymphocyte," and in the majority of cases have eosinophile granules. In some islands nearly every cell is an eosinophile. In the more densely infiltrated islands evidences of enlargement or growth are shown by the compression and condensation of the liver cells immediately about the island. The impression is gained of an infiltration in which the cells are proliferating.

Smaller masses of cells consisting in many cases chiefly of eosinophiles are also found scattered throughout the liver lobules. These apparently consist of collections of the atypical lymphocyte cells in the dilated capillary, with their further proliferation, and the resulting compression of the neighboring liver cells. Evidences of such pressure condensation and atrophy are clearly seen. In the larger of these masses some reticular proliferation is also seen. In some portions of the sections the collection of cells in the capillaries is so great that the latter appears as cords of deeply staining cells, while the columns of liver cells are in a condition of marked fatty degeneration or simple necrosis, staining a very pale pink or a deep red, the liver-cell nuclei being wholly lost. In these areas there are great numbers of degenerating lymphocytes in the capillaries. Relatively few eosinophiles are seen in the distended capillaries. In many capillaries there is present also a well-marked endothelial proliferation. It is to be noted also that the number of eosinophiles in the large vessels of the liver is relatively much less than in the infiltration in Glisson's capsule, or in the larger collection of cells in the lobules. In interpretation of the liver changes the condition may be regarded as due to the presence in the blood vessels of the liver of cells having the power to proliferate both in the vessels and after passing out into the connective tissue. The process is therefore analogous to tumor metastasis and infiltration.

Pancreas.—Sections show slight atrophy of the lobules, fatty infiltration of the interlobular connective tissue, and beginning post-mortem change. Many cells of the "large lymphocyte" type are present in the capillaries and small arterioles. No infiltration of the connective tissue was seen.

Stomach.—There is a moderate chronic atrophic gastritis with excess of mucous formation in the glands. The interstitial tissue is somewhat increased, and presents numerous small collections of cells which are chiefly mononuclear, many being eosinophile. These small collections of cells bear no especial relations to the lymphoid follicles. The latter are somewhat hyperplastic and contain an increased number of cells of the "large lymphocyte" type. Numerous eosinophiles are present in the follicles and also in the small groups of cells. The small tumor from the fundus consists of bundles of unstriped muscle and fibrous connective tissue running in irregular whorls (leiomyofibroma).

Intestine.—Catarrhal enteritis. The blood vessels of the intestinal wall are collapsed and empty for the greater part. Some contain masses or cords of cells of the "large lymphocyte" type. In the mucosa and submucosa there are very small collections of mononuclear cells, many of which are eosinophile. In one instance a larger mass of similar cells was found in the muscularis, small cords of cells extending from the main mass and infiltrating the surrounding muscle. The peritoneal surface is in many places covered with a layer of free cells, mostly of the "large lymphocyte" type, and containing many eosinophiles. The appearance is not that of an inflammatory exudate. The cells are clumped together in irregular groups, and probably represent free cells of the peritoneal cavity.

Kidneys.—There is slight atrophy, the glomeruli in the majority of fields being more numerous than under normal conditions. The cells of the convoluted tubules show a slight degree of cloudy swelling. The blood vessels of the medullary pyramids are dilated; many are filled with red blood cells with relatively few leucocytes; others are completely filled with cords or masses of cells of the "large lymphocyte" type. In these masses numerous eosinophiles are present. In the blood vessels of the cortex there is a similar distribution of cells. Throughout the cortex there are numerous collections of cells replacing the kidney structure, the largest being two to five milimeters in diameter. They are chiefly situated just beneath the capsule, which is thickened and infiltrated with cells of the same kind. From the main mass of cells irregular cords infiltrate the surrounding kidney tissue following the intertubular connective tissue. In the central portions of these masses all trace of kidney structure may be lost; occasionally an atrophic glomerulus or remains of tubules may be present. There is a distinct new formation of reticulum, and in some cases there is a picture of an interstitial nephritis immediately about the cell mass. About many of the latter, however, the kidney shows no recognizable changes. In others the tubules and glomeruli of the surrounding infiltrated zone are atrophic or compressed or even necrotic. The cells of these masses are almost wholly mononuclears of the type of large lymphocytes, many being eosinophiles. In some cases nearly all of the cells are mononuclear eosinophiles. The cells of the surrounding infiltration are of the same type.

While numerous individual degenerating cells are found, there is no degeneration *en masse* of any portion of these cellular foci. Smaller cell groups are also found throughout the cortex, usually in the immediate neighborhod of a capillary or arteriole filled with white cells. Some of the smaller groups consist wholly of mononuclear eosinophiles. Even in these smaller collections there is a well-marked proliferation of the kidney reticulum. The general picture presented microscopically is that of metastatic growth of cells of the large lymphocyte type, replacing the kidney tissues by means of a slow infiltrative proliferation.

Bladder.—Chronic cystitis. Thickening of mucosa and submucosa. Increase of leucocytes in many blood vessels, the cells being chiefly mononuclear and of the "large lymphocyte" type. No infiltration found.

Prostate.—Collections of mononuclear cells of "large lymphocyte" type in some of the blood vessels. About these there is a limited infiltration, in many cases containing many eosinophiles.

Testis.—Similar collections of cells are found in some of the blood vessels and similar small infiltrations near them. The lining epithelial cells show an unusual degree of pigmentation.

Spinal Cord.—There is some evidence of atrophy and degeneration. (A more complete study of the changes in the cord has been left for another time.) There is no cellular infiltration of cord or meninges. An increased number of leucocytes, chiefly mononuclear, is found in many of the smaller vessels.

Blood Vessels.—The blood vessels throughout the entire body contain an excess of white cells, the majority being mononuclear cells of the "large lymphocyte" type. The number of cells in the vessels differs greatly in different parts. In many places the distention of the lumen, the packing of the cells, and the infiltration of the vessel wall convey the impression of an intravascular proliferation. The proportion of eosinophiles is much less in the vessels than in the tissues.

Pathological Discussion.—Summing up the most important histological changes as shown by the microscopical study of this case, the primary condition appears to be a tumor-like hyperplasia of the red marrow of the vertebræ and sternum with secondary infiltration of the periosteum and neighboring structures, and the occurrence of metastasis-like infiltrations and nodules in the lungs, liver, kidneys, hemolymph nodes, tibial marrow, etc., associated with a cellular hyperplasia of spleen and lymph glands, and evidences of cell proliferation within the smaller blood vessels in various parts of the body.

That the changes in the marrow of the vertebæ and sternum are primary is shown by the fact that the normal marrow elements are completely replaced by the new cells, the marrow spaces enlarged, and the bony trabeculæ rarefied, and by the direct extension of the cell growth in the marrow spaces outward from the bone beneath and into the periosteum. The prevertebral chloromatous tissue is, therefore, nothing more than the periosteum, prevertebral fat-tissue, and fascia infiltrated secondarily by cells coming from the bone-marrow through the blood and lymph vessels, and by direct extension through openings in the bone. The chloromatous tissue over the sternum is similarly interpreted. The greater extent and larger mass of the green tissue along the vertebræ, together with the greater changes in the vertebral marrow spaces and trabeculæ, would indicate that the vertebral condition antedated the sternal.

The cells of the tumor-like hyperplasia of the marrow correspond in their morphologic and staining characteristics to two classes of cells found normally in the bone-marrow, viz., cells of the type variously known as the *large lymphocytes, undifferentiated lymphocytes, large mononuclears,* etc., and cells of the *myelocyte type,* both eosinophile and neutrophile, the eosinophile forms greatly predominating. In general it may be said that about half of the new cells fall into the class of "large lymphocytes" and about half into that of the eosinophile myelocyte. Between the two all possible transition forms exist, and these may be classed with the type which they most resemble. From the character of the transition forms found the evidence is strong that the cells of the myelocyte type are derived from those of the "large lymphocyte" type. This supports the view of Ehrlich and others as to the origin of the myelocytes in the normal marrow.

The condition of the vertebral and sternal marrow may therefore be interpreted as a hyperplasia of the cells of the "large lymphocyte" type or of their parent-cells, a part of the new "large lymphocytes" resulting from this proliferation becoming transformed into myelocytes according to their ordinary course of development under normal conditions. The atypical character of the new "large lymphocytes" and myelocytes produced by this abnormal proliferation may be taken as evidence of the neoplastic nature of the process. This is shown particularly in the loss of the normal differentiation into normal neutrophile and eosinophile myelocytes. In so far as the vertebral and sternal marrow are concerned we have to deal therefore with *a hyperplasia of the large lymphocytes which replaces the other elements of the marrow and in the extent and manner of its growth assumes the character of a neoplasia.*

The neoplastic character of the marrow hyperplasia is further shown by the changes in the walls of the marrow spaces, the infiltration through the blood and lymph vessels, and the direct extension from the bone into the tissues of the periosteum and other neighboring structures. The cells of the infiltration are precisely identical with those of the marrow spaces; there is, therefore, an infiltration of the periosteum and

prevertebral tissues with cells of the "large lymphocyte" and myelocyte types, this infiltration being distinctly neoplastic in character. The infiltrating cells are proliferating in the tissue spaces, and are destroyed and replacing the tissues infiltrated. Such destruction is not of a very rapid or malignant type; the infiltrated tissues show but slight reaction, there is some connective-tissue increase, the walls of many vessels are thickened, and in some of the smaller vessels there is an endothelial hyperplasia. Nerve trunks and ganglia show a more or less decided atrophy, striped muscle fibers all stages of atrophy, and the fat cells of the infiltrated prevertebral adipose tissue also present various stages of pressure atrophy. About the nodular masses of the infiltration the tissues often show some degree of condensation and pressure atrophy. Aside from the purely mechanical effects, pressure and blocking of vessels, etc., the disturbance of the tissues infiltrated is remarkably slight. The growth of the cells through the tissues appears to be largely the result of a direct proliferation in the blood vessels and lymph vessels, the cells growing through the vessel walls, of proliferating in the tissue spaces after having passed out from the vessels. The slight effects upon the tissues may be explained by the assumption of a relatively slight antagonism between the body tissues and the new cells. In general the new cells of the infiltration may be regarded as free cells proliferating in the tissue spaces. Even in the larger and denser masses of the prevertebral region the reticulum is apparently the original reticulum of the tissue more or less thickened, and there is no new formation of blood vessels. The antagonism between the new-growth and the tissue cells must therefore be much less than in the case of the infiltrating tumors, carcinoma, and sarcoma.

From the microscopic appearances the proliferation of the new cells is chiefly by amitotic division. The numerous indentation and constriction forms of the nuclei, the double nuclei, etc., are taken as supporting this view. Division and growth of the cells within the blood vessels undoubtedly takes place. Throughout the body dilated vessels filled with masses of the new cells were found; in many of these the vessel walls is infiltrated or grown through with cells, and about the vessel there is a more or less well-marked infiltration. Evidences of proliferation within the lumen of the blood vessels are especially well marked in the liver.

The nodules in the lungs, liver, kidneys, hemolymph nodes, and tibial marrow appear to be true metastases arising chiefly through the intravascular proliferation of cells and the secondary invasion of the surrounding tissue. As in the prevertebral infiltration and metastatic nodules have but little antagonistic action upon the tissues at the site of the growth; there is but little reaction and but little new formation of reticulum and apparently no new formation of blood vessels. In the kidney alone is the increase of reticulum at all pronounced; in this organ the secondary nodules are in many cases the seat of an interstitial change suggesting a chronic nephritis. In general the effect of the metastases upon the surrounding tissues is chiefly a simple atrophy. In the liver there is also some fatty degeneration and occasionally a localized necrosis about the cell masses. The cells composing the metastases are identical with those of the sternal and vertebral marrow and the periosteal infiltrations.

The blood vessels throughout the entire body show an increase in the number of white cells, the picture presented being that of a marked leucocytosis or leucemia. The greater part of these white cells in the vessels is found to be identical with the "large lymphocytes" of the primary marrow growth, the prevertebral infiltration, and the metastases. As mentioned above, there are evidences of the intravascular proliferation of these cells. The case therefore presents the picture of *a leucemia of the large lymphocyte type associated with a primary neoplastic hyperplasia of the bone-marrow, chloromatous infiltrations of the periosteum, and metastases in various organs. That the leucemia is secondary to and dependent upon the marrow condition there can be no doubt.*

Assuming that the process is essentially neoplastic in its character, it is evident that the new-growth is not identical with any of the known neoplasms. The terms lymphoma, lymphosarcoma, myeloma, etc., cannot be appropriately applied to it, nor is it satisfactory to class it simply as sarcoma. The individual character of its cells and its manner of growth give it a unique place as a neoplasm, and it must fall into a class of its own—a class to which probably all the leucemias belong—due to an abnormal proliferation of the parent cells of the white cells of the blood. To such tumors the term *myeloblastoma* or *leucoblastoma* might be applied, but a discussion of the propriety of such designations will be reserved for another time.

While accepting the neoplastic character of this case of chloroma, the fact remains that nothing is disclosed as to the etiology of such an abnormal hyperplasia of the bone-marrow elements. Intoxication or infection is not ruled out as the etiologic factor, and we are in exactly the same position here as we are in regard to the question of the etiology of neoplasms in general. Pending the discovery of the ultimate nature and cause of such hyperplastic proliferations, they may, with propriety, be classed temporarily with the neoplasms.

It is quite evident in this case that there is no picture of a general disease of the lymphoid tissues of the body, as in certain cases of lymphosarcoma, etc. The changes in the spleen and lymph glands are purely secondary. The germinal centers in these show no signs of excessive proliferation; on the other hand, they are in-

volved last of all. The metastases do not necessarily occupy the site of the lymphoid tissue of the organs in which they are found; but their location is determined independently by proliferating collections of cells in the blood vessels. This is shown particularly clearly in the lungs, stomach, and intestine, where the lymphoid nodes themselves are but little involved, while numerous small collections of cells are found along the arterioles. *The idea of a general lymphatic affection may be rejected here; the process is myelogenous in origin and has become generalized through the blood vessels. It is a general disease only in the sense that the blood vessels contain cells having the power to proliferate intravascularly and to set up infiltrations and metastases.*

The general myeloid character of the spleen and some of the hemolymph nodes may possibly be due to some effort at compensation for the lost marrow function. As a result of the replacement of the normal red marrow by the atypical lymphocyte and myelocyte tissue the formation of the red blood cells must have been greatly diminished. The extreme anemia shown by the patient is thereby explained. No evidence exists of any marked hemolysis. The pigment of the liver may be explained by the lessened splenic and hemolymphatic functions, although it is probable that the changed conditions of the blood plasma may have caused some direct hemolysis. The large numbers of individual degenerating large lymphocytes found everywhere may have given rise to some intoxication. It is very probable that the extreme anemia, either with or without the cooperation of these more doubtful factors, would explain the majority of the clinical symptoms. The involvement of the spinal nerves and ganglia by the infiltrations is also a very important factor in the explanation of the symptomatology. The eye and ear conditions might be similarly explained, though the anemia itself might account for both. The changes in the blood would explain the petechial hemorrhages and the endothelial proliferation. It may be well, however, to repeat here that the primary process—the atypical proliferation of the marrow cells—may be due to an intoxication having a marked myelotoxic action. Of such an intoxication we have no proof.

As to the nature of the green color of the bone-marrow and periosteal growths the case offers no explanation. No evidences of pigment were found in the cells, and no fatty bodies reacting with Sudan III or with osmic acid. The guaiac test was not employed. Hydrogen peroxide and ammonium hydroxide were not used upon the fresh tissue and had no effect upon the fixed material. The supposition that the color might be due to the large number of eosinophiles present would not be supported by other cases of chloroma in which it is definitely stated that few eosinophiles were present. The best explanation of the color would appear to be that it is a true parenchymatous color.

Charcot-Leyden crystals were not observed in this case.

From the above study and discussion the following diagnosis is obtained:

Pathological Diagnosis.—Chloroma (primary hyperplasia of the "large lymphocytes" of the red marrow); secondary chloromatous infiltrations of the prevertebral and sternal periosteum; metastases in lungs, liver, kidneys, hemolymph glands, bone-marrow, etc.; secondary hyperplasia of spleen and lymph glands of thymus region; leucemia (large lymphocyte type); severe anemia; general atrophy and parenchymatous degeneration; chronic atrophic gastritis; lipomata of shoulders; myofibroma of stomach wall.

Epicrisis.—According to the commonly accepted definition at the present time chloroma is a "tumor belonging to the general class of sarcoma, more precisely to the group of lymphoma, lymphosarcoma, so-called leucemic and pseudoleucemic tumors, etc., characterized by its green color and arising primarily in the periosteum, particularly in that of the cranium." The study of the present case as given above shows that this definition must be changed essentially, and that based upon our case a new conception of the nature of chloroma may be formed. In this case, at least, chloroma is a primary tumor-like hyperplasia of certain elements of the bone-marrow; the periosteal condition is purely secondary, and the character of the neoplasia does not warrant its classification as a lymphoma, lymphosarcoma, or simple sarcoma, but assigns it to a class of its own, a class of neoplastic hyperplasias arising from the atypical proliferation of the parent-cells of the white blood cells, hence belonging to the leucemias. Chloroma could therefore be primary in any part of the body in which white blood cells are formed, either under normal or abnormal conditions. From the reported cases of this condition it would appear, however, that the cells proliferating in chloroma are those that produce the large lymphocytes and their descendants and not those giving rise to the small lymphocytes. In addition, the constant localization of the green growths in association with the bones containing red marrow supports the view that chloroma is essentially myelogenous, and the existence of a primary chloroma of the spleen or lymph nodes remains to be demonstrated.

Of the previous writers upon chloroma Gümbel appears to be the first to regard the affection as a primary bone-marrow disease. The recently reported case of Klein and Steinhaus (see above) is, however, a striking confirmation of the findings in our case and of our deductions. In their case the newly formed cells bear the character of neutrophile myelocytes, and represent a higher differentiation than in our own case in which the cells are about half large

lymphocytes and half mononuclear eosinophiles. It is evident, therefore, that different varieties of chloroma will exist in so far as the blood picture is concerned, just as in the case of the leucemias.

The "free" character of the cells of the chloromatous infiltrations and metastases, and of the blood vessels and tissue spaces would easily explain their disappearance under the influence of certain infections, intoxications, x-rays, etc., such as we know occurs in the case of leucemia. The action of such agents could be explained by the assumption of a destruction of cells exceeding or equaling their production, or by an inhibition of the proliferative activity of the parent-cells, or by direct action upon the etiological factor. The destruction of large numbers of the new cells might in itself give rise to an intoxication. Interesting questions are opened up along this line which must be solved later.

Without burdening this paper further with additional details and arguments we think we are justified in arriving at the following conclusions:

CONCLUSIONS.

1. *Chloroma is a tumor-like hyperplasia of the parent-cells of the leucocytes, primary in the red marrow, the periosteum being involved only secondarily.* The possibility of a primary chloroma in any part of the body in which white cells are formed must be considered.

2. As a result of this leucoblastic hyperplasia atypical leucocytes or leucocytes corresponding to some one of the normal types may appear in the circulating blood in varying number. Chloroma is therefore to be classed with the leucemias.

2. The white cells resulting from the atypical proliferation may in different cases attain different stages of differentiation. In some cases they may be of the large lymphocyte type, in others of the type of neutrophile or eosinophile myelocytes. At different stages of differentiation atypical forms may be produced. Whether a small lymphocyte type exists remains to be more definitely shown.

4. It is evident, therefore, as in the case of other leucemias, that the blood picture in chloroma may be very varied, and if this be used for a basis of classification it is possible to designate different varieties of chloroma.

5. It is also possible that in certain cases, or possibly stages, of chloroma the hyperplasia of the parent-cells may reach such a stage that the new forms do not get into the blood stream in such numbers as to give the picture of a leucemia. An aleucemic chloroma is therefore possible.

6. The essential difference between chloroma and other forms of leucemia is the more marked neoplastic character of the former and the formation of the green infiltrations and metastases. The following classification of chloroma is therefore proposed:

Chloroma (chloromatous leucemia).	1. Aleucemic chloroma (?).	1. Small lymphocyte type (?).
		2. Large " "
	2. Leucemic chloroma	3. Neutrophile "
		4. Eosinophile "
		5. Atypical.
		6. Mixed.

7. Chloroma is probably to be regarded as a more malignant form of leucemia. The white cells resulting from the atypical proliferation have the power of multiplying in the blood streams and in the tissue spaces, thus giving rise to masses of cells having the characteristics of metastatic tumors. It is probable that the proliferative activity is proportionate to the lack of differentiation. In the neutrophile and eosinophile forms we should expect a less marked tendency to proliferation; on the other hand, the large lymphocyte and atypical forms would show a greater proliferative capacity, and hence be more malignant. The aleucemic types theoretically would be the most malignant of all, and present characteristics more closely allying them with the sarcomata.

8. The atypical hyperplasia of certain of the elements of the bone marrow leads to the crowding out and replacement of the erythroblastic elements, and a consequent lessening of red-cell formation. Chloroma is therefore attended by and is the cause of a severe *anemia,* to which the chief symptoms of the disease are probably due. This anemia, while it may resemble pernicious anemia in many ways, is essentially *an anemia of deficient hematopoiesis and not one of excessive hemolysis.*

9. The malignancy of chloroma depends, therefore, chiefly upon the replacement of the red marrow and the consequent diminished red-cell formation. The slight antagonism between the new cells and the body cells would otherwise place it among the relatively benign growths, except in those cases in which important nerve structures are injured by compression by the infiltrations or through rarefaction of the bones. The large numbers of degenerating white cells present throughout the body may possible give rise to an intoxication.

10. The cause of the green color remains unknown. It is probably a parenchymatous color. It is possible that processes morphologically like chloroma may lack the characteristic green color. Such cases should be classed with the non-chloromatous leucemias.

11. While classing chloroma temporarily as a unique form of neoplasm, the question of the ultimate etiology of the process is not settled. At present intoxication or infection can no more be ruled out than in the case of carcinoma or sarcoma. We are in the same position here as in the case of neoplasms in general.

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INTRACEREBRAL INJECTIONS OF ANTITETANIC SERUM IN TRAUMATIC TETANUS.[1]

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TETANUS is strictly a localized infection. In the wound only a small number of the bacilli are found, and they rarely reach the blood or any of the distant organs.

The toxin has been proven to have a particular affinity for the central nervous system, especially the ganglion cells of the anterior horns of the spinal cord and medulla, with which it unites with such great firmness that it is difficult to separate it. Its presence has been demonstrated in the cerebro-spinal fluid. Roux and Borrel conclude that antitoxin injected subcutaneously remains in the blood, and is therefore unable to reach the toxin which is fixed in the nervous system.

Experiments by Meyer and Ransome also support this conclusion, explaining as they do the variation in time (from four to fourteen days) elapsing between inoculation with the toxin and the appearance of symptoms.

It would seem that tetanus toxin does not[2] reach the spinal cord through the blood stream, but by slowly passing along the axis cylinders of motor cells from their terminations. Apparently the myelin sheath acts as a quite impervious membrane, and the toxin enters at the end of the neuron where it is not provided with this sheath. Sensory nerves do not transport the toxin to the cord. The toxin enters the nerve endings from two sources; the first is at the site of the infection, where the toxin is most concentrated, and this probably explains why tetanic spasm frequently begin in the vicinity of the infected part, or are most marked at this point. The rest of the toxin is taken up by the blood and lympth and distributed, to enter the motor nerve endings in small quantities all over the body, and by passing along the motor fibers to enter the cord diffusely, leading to the generalized spasms. The latent period that elapses after injection of the toxin before symptoms appear is occupied by the passage of the toxin along the motor fibers to the spinal cord; if the toxin is injected directly into the spinal cord symptoms appear at once.

From the pathology it is therefore seen that the intracerebral injection of the antitetanic serum is the correct method of treatment for this disease. The following cases tend to confirm this conclusion:

Case I.—F. M., age twenty-one years, occupation shoemaker. Family and previous history negative.

Present Illness.—On May 8, 1903, while working in a livery stable, he stepped on a rusty iron nail, which entered the left great toe. The following two days no symptoms were noticed, except that the wound was tender to the touch. During the fourth day the patient complained of severe headache, associated with stiffness of the posterior neck muscles, which gradually increased in intensity. About 11 A.M. the next day trismus developed and at the same time he complained of pain in the masseter muscles and cramps in the legs.

In this condition he presented himself at police headquarters, and while there he had his his first tonic spasm. At first the spasms came on about every fifteen minutes, but became more frequent, and at the time of admittance to the County Hospital they occurred every two or three minutes. The convulsions were so severe that the patient's body was in complete opisthalonos, although during these attacks consciousness was unaffected. At the time the operation was performed the temperature was 99° F., pulse 115, respiration 24. Had difficulty in swallowing and was unable to talk on account of the jaw being locked.

Examination, May 12, 1903.—Patient was conscious of his surroundings and his condition. All deep and superficial reflexes were increased. There was marked spasm of the masseter muscles causing lockjaw, the teeth being separated about one-half inch and the lower jaw unmovable even with the greatest pressure.

During the examination he had a convulsion

1 Read before The Rocky Mountain Inter-State Medical Society, September, 1904.

2 American Medical Journal, p. 1622, 1904.

in which all the muscles of the body were affected, including those of respiration. All special senses normal. The pupils equal and responding to light and accommodation. Fundi normal.

On May 12 at 6 P.M. Dr. C. B. Lyman and Dr. J. K. Swindt made a small trephine opening in the right frontal bone and injected 20 c.c. of antitetanic serum into the right frontal lobe of the cerebrum. At 6:30 P.M., while under chloroform, he had a convulsion. At 1 A.M. May 13, he had a slight convulsion, with marked trismus. Chloral hydrate grs. xxx was ordered at this time on account of the severe twitching. At 7 A.M. May 14 slight twitching, rigidity of masseter muscles very much less than in previous attacks. After this convulsion chloral hydrate grs. xxx sodium bromide grs. xl were given every six hours.

The trismus, which was constant before the antitetanic serum was injected into the cerebral tissue, continued after the operation for seventy-two hours, when it ceased, as did the spasms. He remained in the hospital until May 26, 1903, when he was discharged, after making a complete recovery.

I am indebted to Dr. I. B. Perkins for the privilege of reporting the following cases:

Case II.—E. F., a boy, ten years of age, while playing with a toy pistol on July 4 last, exploded a blank cartridge, the wad of which took effect in the palm of the left hand, inflicting a somewhat lacerated wound and burying itself deeply in the tissues. He was taken to the police station, where the wound was dressed and subsequently cared for until it had entirely healed.

On July 23, nineteen days after the injury, Dr. I. B. Perkins saw the patient in consultation with Dr. A. A. Clough, who had just been called into the case. Marked trismus was present. During the tonic spasms which came at short intervals the jaws set tightly together. The posterior muscles of the neck, as well as the muscles of the back, became rigid, and the boy appeared to experience great pain. In the interval between the spasmodic attacks, the muscles of the jaws were not to rigid, but they did not relax sufficiently to allow the jaws to be separated. The muscles of the neck and back relaxed slightly in the interval, but contracted instantly on the approach of the spasms, drawing the head firmly backward.

Tetanus was diagnosed and immediate operation was decided upon. While on the way to the hospital slight jars of the vehicle caused severe spasmodic attacks. While being anesthetized, and after he was unconscious of his surroundings the rigidity of the muscles remained and the jaws could not be separated until he was completely anesthetized. When coming out of the anesthesia the trismus returned and was quite marked before the return of consciousness. Roux's point was selected for injecting the serum into the brain-substance. The patient being right-handed, a flap one inch in diameter was made over the right frontal bone, with the open portion of the shoe directed toward the temple. The periosteum was lifted with the flap, and a trephine button one-fourth inch in diameter was removed. The needle of the syringe was introduced into the brain substance to a depth of two inches, with the point directed downward and toward the median line, and 10 c.c. of antitetanic serum was slowly injected during the withdrawal of the needle. Ten more cubic centimeters of the serum were injected in the same manner with the point of the needle directed forward and downward, and not toward the median line. The tissue flap was then sutured in position. The button of the bone was not replaced.

An incision was made in the hand at the point of injury and several small pieces of the wadding were removed.

Reaction following the operation was prompt, and although the trismus returned on the return of consciousness the spasms were not nearly so severe and subsided altogether after forty-eight hours.

Immediately following operation, sodium bromide grs. x and chloral hydrate grs. v were given by enema. This was repeated at varying intervals for several days, and then small doses of the bromide and chloral were given by mouth, sufficient being used to keep the patient sleeping most of the time. The temperature was 99° F. at the time of the operation, and did not go above 99° F. at any time. The highest rate of pulse was 108.

There was some stiffness of the limbs on first attempting to walk, which was two weeks after operation. This was not more marked on one side than on the other, and disappeared in a few days. At this time the patient appeared to be in a perfectly normal condition, having made a complete recovery.

Case III.—A. C., aged twelve years, schoolboy. Always enjoyed good health. On July 4, 1903, while playing with a revolver, it exploded, the contents of the blank cartridge entering the right knee. He was cared for by his mother for fourteen days after the accident, but the symptoms became so alarming that Dr. J. M. Perkins was called to see him.

On examination it was found that he had had headache, cramps and stiffness of the muscles for the past two days. During the examination the patient had a general convulsion on an average of every fifteen minutes. While transporting him from his residence to the hospital the spasms occurred so frequently that it became necessary to use chloroform. On arriving at the hospital the pulse was 150, temperature 101° F., respiration 50. Twenty cubic centimeters of antitetanic serum were injected into the right frontal convolution.

Patient died two hours after operation.

In the three cases reported a trephine opening was made in the right frontal bone half way between the outer angle of the orbit and a point on the vertex, at the juncture of the line crossing over between the two auditory canals. The trephine opening should be small; a small slit made

in the membranes and the needle introduced two inches into the cerebral substance of the frontal lobe of the brain. In these cases the right frontal lobe was selected for the injection because the patients were right-handed, for if any paralysis followed the injection of the serum the center of speech would not be involved. The needle is directed forward and slightly downward.

The mortality of cases of traumatic tetanus treated by the ordinary medical means is very high, averaging about 90 per cent. In 147 cases treated by the intracerebral injection of antitetanic serum the mortality is 61 per cent.

The total quantity of antitoxin injected into the brain varies from five to 70 c.c. at any one time. In the three cases reported 20 c.c. were injected into the cerebral substance at once, and it is the belief of the writer that the success of this method of treatment depends upon the use of large quantities of the serum.

The danger in using serum intracerebrally is due to the fact that it acts as an irritant, and may cause a meningitis, cerebritis or a cerebral abscess. In a number of cases hemorrhages have occurred.

MEDICAL PROGRESS.

SURGERY.

The Bridging of Nerve Defects.—This is a broad subject, embracing as it does nerve repair and degeneration, primary and secondary neurorohaphy, stretching, bringing and so on, but it is nevertheless of the keenest interest to all, since injuries to the nerves are by no means uncommon. Charles A. Powers (*Annals of Surgery*, November, 1904) records the history of his own case of nerve transplantation and records in detail the bibliography so far as it is accessible. His own operation consisted in the implantation of four inches of the great sciatic nerve of a dog in the external popliteal of a man. The operation was done in 1896, and it has, therefore, been eight years since its completion. The case was that of an eighteen-year-old boy, who had been severely injured by a railway train. The popliteal nerve was destroyed in about four inches of its course, and the extremities were, therefore, so far separated as to be impossible of union. The wound area was very dirty, so transplantation was not done until this had cleaned up. The great sciatic nerve of a 35-pound-dog was introduced. A very short time after the operation, sensation, both of temperature, pressure and pain returned. Within six weeks all forms of sensation were normal, but after the lapse of a year there was considerable atrophy of the muscles of the leg in the upper third. Abduction of the foot was, however, impossible. The results were good as regards sensation, but negative as to emotion. Seven years later, like conditions existed. The operation, therefore, may be looked upon as a complete failure as regards motion. In conclusion the author says that more case are needed before any definite conclusion can he reached as to the best means of treating the evils resulting from a gap in the continuity of a nerve. Neuroplasty and implantation should probably be preferred. Bone resection may be advisable in selected cases. Transplantation of foreign grafts should be abandoned, for it may be considered as definitely shown that a piece of nerve has no intrinsic superiority as a graft to any other kind of organized tissue.

Uncomplicated Gunshot Wounds of the Stomach.—Considerable traumatism in gunshot wounds is, according to V. Oppe (*Roussky Vrach*, No. 35, 1904) always an indication for surgical interference, no matter how unfavorable the prognosis. The importance of the lesion lies not in the wound of the stomach but in the traumatism of the large blood vessels. The expectant treatment in uncomplicated wounds of the stomach alone is always followed in a certain number of cases by general peritonitis. Early abdominal section is considered by such surgeons as Mikulicz, Kukula and others, as the only method of treatment of gunshot wounds of the stomach in time of peace. If the wound is located in the abdominal walls corresponding to the site of the stomach, then it remains to decide as to whether it extends into the peritoneum and whether the stomach is invaded. At times it is not difficult to decide this question, but frequently it can not be easily determined. The author cites, among others, the case of a girl of eighteen years, who shot herself in an attempt of suicide. The wound was located along the left mammary line, below the nipple. Four hours later abdominal section was performed as the author suspected invasion of the stomach. Its anterior surface proved to be the site of a wound 1½ cm. long, there was no prolapse of the mucous membrane, nor was there any exudation of the gastric contents through the wound. The posterior wall of the stomach contained no wound of exit, and no bullet was felt in the cavity of the stomach. The peritoneal cavity was filled with 800 c.c. of a warm saline solution. The postoperative course was uneventful. The sutures were taken off on the sixth day. Examination of the abdomen with X-rays failed to discover the whereabouts of the bullet, which, however, was found located in fecal masses in the rectum, and extracted without difficulty. When the symptoms point to an undoubted trauma of the stomach, operative interference becomes imperative so as to prevent a possible purulent peritonitis. However, Réclus is a warm defender of expectant treatment, as according to him the healing of the wound is frequently brought about by the falling into it of the mucous membrane which thus serves the purpose of a tampon. But Klemm has shown experimentally that such healing is of infrequent occurrence, as the peristaltic movements of the organ must necessarily prevent the closing of the wound. Abdominal section is indicated, in gunshot wounds of the stomach alone, only in recent cases. But if the patient comes under the surgeon's care on the third day and later, then the question as to the operation will depend on the peculiarities of the given case, for the absence of symptoms pointing to an invasion of the peritoneum during the first twenty-four hours will serve as an indication that the wound of the stomach does not permit the exudation of its contents into the peritoneal cavity.

Cancer of the Larynx.—The question of treating this dreadful lesion still remains open, but American and English operators are thoroughly awake to the importance of reaching some definite and satisfactory method both of recognition and of treatment. Felix Semon (*Lancet*, November 5, 1904), concludes first, that here as elsewhere early diagnosis is paramount. For this purpose it is absolutely essential that all idea that a patient suffering from malignant disease of the larynx shows grave constitutional symptoms early must at once be eradicated. For this time-honored belief must be sub-

stituted among laymen and practitioners alike the belief that persistent hoarseness occurring in middle-aged or elderly people is sufficient evidence, other things being equal, to justify radical operation. These are the cases which yield the most brilliant results. Although clinical manifestations and physical examination will almost invariably serve to give a correct interpretation at the hands of experienced examiners, no case should be operated upon radically without a confirmatory laboratory report of a portion of tissue removed for microscopical examination. This, however, should be done only if the patient previously consents to immediate radical operation in the event of the microscope confirming the clinical diagnosis. Nevertheless, as in other cases of malignant disease, the microscope is by no means an infallible guide in these cases. Should its evidence be negative or inconclusive, the intralaryngeal removal and microscopical examination of fragments should either be repeated, if necessary, several times, or if the clinical symptoms do not warrant postponement exploratory thyrotomy should be undertaken. The intralaryngeal method is from its very nature unsuitable for the radical removal of malignant new growths of the larynx. Subhyoid pharyngotomy, apart from being applicable in a very small number of cases only of malignant disease of the larynx, is still *sub judice* with regard to its advisability in such cases. Thyrotomy, if undertaken in suitable cases, and at sufficiently early period, and if performed on the modern lines which experience has shown to be successful, is a perfectly ideal operation in intrinsic cancer of the larynx. Hemilaryngectomy comes into question only when it is found after opening the larynx that mere thyrotomy will not suffice. When performed, it may be accompanied by removal of the tributary lymphatics, even if apparently not diseased. Total laryngectomy should be exclusively reserved for extrinsic, and for those cases of intrinsic cancer, in which both sides of the organ are affected, and in which the disease has proceeded too far to be eradicated by milder measures. When performed it should be accompanied by the removal of the laryngeal lymphatics on both sides of the neck.

MEDICINE.

Clinical Study of Actinomycosis.—The increase in frequency of this disease, following directly upon the concentration of inhabitants in our overcrowded cities, makes a recognition of the condition of particular importance. If infection should happen to be superficial, of course surgical measures are at once indicated. Free excision is the most rational method of treatment, unless, as is often the case, the growth is so situated as to render this impossible. In this event the medical treatment should be instituted and iodide of potassium appears to be a specific in early cases at least. Robert Knox (*Lancet*, October 29, 1904), states that the remedy must be pushed rapidly to its extreme dosage limit. Apparently in this case, as in the case of others of the granulomata, the patients are singularly tolerant of the drug, it being almost impossible to induce iodism. In the case of two patients whose cases were reported by the author, one in five months took 16,320, or an average of 103 grains daily, without exhibiting any undue symptoms. Indeed the patient appeared to improve much while taking the iodide and missed the drug when it was omitted. The other patient took 40 grains daily and improved under the treatment. The most important point in this condition, as in tuberculosis, is to make an early diagnosis. Unfortunately, this has not, up to now, been accomplished until the very latest stages, when, unless the case be susceptible to surgical treatment, the patients are beyond hope. A similarity which exists between actinomycosis and tuberculosis is unfortunate from a therapeutical point of view, because the one disease is so frequently mistaken for the other. The author points to the interesting fact that three members of a single family were the subjects of infection, this being another point in common with tuberculosis.

Bitemporal Hemiplegia.—Blindness on the temporal sides of the eyes, so that objects can be seen only with the nasal portion of each eye, is reported by Flavell B. Tiffany (*Medical Fortnightly*, October 10, 1904), showing the anatomy, lesion and treatment of a case. The fibers from the temporal halves of the eyes do not cross, but come up to the chiasm and diverge to the base of the brain on the same side, while the fibers from the nasal halves of each eye cross and go to the base of the brain on the opposite side. Should a lesion be located at the chiasm involving the decussating fibers only, the part of the eye from which those fibers come would be affected, but the fibers from the temporal sides, as they do not cross, would remain uninvolved. In the case reported the eyes troubled him for five years, and on examination it was found that if the left eye were closed objects on the left or nasal side could be seen, all objects on the right or temporal side were invisible. Also, if the right eye were closed objects on the right were visible, those on the left being entirely out of view. No history of injury, syphilis or poison was obtainable, the patient had had rheumatism off and on, and an attack of grippe three years before. It is thought the lesion was due to the toxins, and an exudate due to grippe. The treatment consisted of one-half grain of pilocarpine, night and morning, inunctions of blue ointment and electro-vibrator massage for several weeks, followed by a tonic of quinine, iron and strychnine. Massage being kept up two or three times a week for about six weeks.

Unusual Forms of Infectious Disease of Central Nervous System.—Successive degeneration of the spinal structure, neither inflammatory nor anemic in origin, observed by James J. Putnam and George A. Waterman (*New York Medical Journal*, October 29, 1904), shows the effect of some toxins on the cord. Progressive impairment of sensation and motion and spinal reflexes which commenced in the lowest sacral segment rapidly advanced, through the lumbar, dorsal and cervical regions, to involve the medulla and ended in unconsciousness and death in about ten weeks' time. The progress of the disease was associated with irregular fever and pulse, leucocytosis and the various symptoms of myelitis. Post-mortem examination shows extensive destruction and degeneration of the cord, with formation of fat granules. The anterior roots are more degenerated than the posterior, but in no place is there evidence of inflammatory condition or impairment of nutrition. The blood serum culture proved sterile and no lesion was found in the brain. There are various forms of nervous disease caused by toxic influence, but it is unusual to see the different segments of the cord successively attacked.

Gastric Ulcer in Children.—One of the diseases from which the young are almost immune is gastric ulcer, especially in the chronic form. In fact, certain clinical authorities actually deny the occurrence of such an affection; nevertheless, E. G. Cutler (*Boston Med*

and Surg. Jour., October 6, 1904), has been able to collect 26 well authenticated cases out of the literature, of which 24 had an autopsy report. The distribution of the ulcers was very variable, showing no marked predilection for any particular area. The etiology of the lesion is rather obscure. In some of the cases developing immediately after birth, of which there were six, the blackened, lacerated appearance suggested effusion of blood into the mucous membrane as the cause of the necrosis. In this connection it is noted that numerous instances of hematemesis or melena shortly after delivery are reported, in which the erosion was probably not so extensive as to prevent rapid healing. In six of the acute cases the ulcer was an intercurrent affection, occurring after several hours, or one of the infectious diseases. A remarkable fact is the preponderance of females, 18 in 29 cases, as in adults. The symptoms in infants are simply melena, hematemesis, restlessness and prostration. In older children, pain and tenderness, usually in the epigastrium, were premonitory symptoms. Vomiting occurred in 16 cases, and was always acid. Hematemesis occurred in 11 cases. The treatment consists in bed rest for three weeks, hot fomentations to epigastrium and a milk diet.

Are There Other Carriers of Malaria than Mosquitoes?—J. POWELL (*Med. Rec.*, November 19, 1904) agress with several other recent writers who believe that mosquitoes do not form the only medium of transmission of malaria. From May 28 to Sept. 1, 1904, ten cases of tertian intermittent fever were observed among the enlisted men in the command at Fort Hamilton, N. Y. All but three of these cases occurred in the same company organization which last year also furnished more than its quota of cases. The barracks for this company are located on the highest elevation in the Post, overlooking the Dyker Meadows, a more or less salt marsh, and are situated but a short distance from the Post dumping grounds. They are also near the battery stables. With the exception of a single *Anopheles* killed in the writer's own quarters, careful examination of the stagnant water in this vicinity, as well as search throughout the entire Post failed to reveal any mosquitoes that differed from the *Culex solicitans* or *Culex pungens*. The author therefore concludes that there is some other unknown factor concerned in the transmission of malaria.

The Value of the X-ray for the Medicolegal Expert.—The various ways in which the X-rays may be applied for this purpose are described by IMMELMANN (*Berl. klin. Woch.*, October 24, 1904). In addition to the application in accidental injuries, it is of signal value for determining the age of premature fetuses. The epiphyses of the long bones are known to remain permeable to the rays until after birth, with the exception of that of the distal end of the femur, which is visible at the thirtieth week of fetal life. As this is the time legally set for a possibility of the child having been viable, it is the duty of the one making the autopsy to fully demonstrate this point. It may also be necessary to determine whether the child has breathed or not, and this may be readily done by the X-rays. The author has shown that unexpanded lungs give a dark shadow like that of muscle, while lungs which have been filled with air readily permit the rays to pass through, and hence give no shadow. A number of other fields, including the important one of military surgery, have also been favorably exploited by this agent.

Treatment of Basedow's Disease.—An interesting case of this disease, in which the milk treatment advocated by Lanz was employed with excellent results, is reported by O. E. LADEMANN (*Am. Med.*, November 19, 1904). This consists of feeding patients afflicted with exophthalmic goiter with milk from thyroidectomized goats, and is based on the theory that in thyroid cachexia a poison is circulated in the economy, which under normal conditions by the thyroid secretion, and the secretions of such a cachexia, if used in Basedow's disease, might have an antagonizing effect on the poison of this affection. He treated a number of patients with milk from thyroidectomized goats with excellent results, the symptoms improved and the weight increased. The writer's case was a severe one, the exophthalmos and the goiter being very prominent, there was considerable emaciation, choreiform movements and a leucopenia. The milk was given in varying quantity, from 2 to 3 pints daily. Improvement was slow, but constant, and in three months she had gained about 13 pounds. The author believes that instead of the milk having a direct antagonistic action, the process is one of neutralization, or possibly combination, and the effects last only as long as the milk is given. Moreover, the severer the exophthalmic goiter, the more milk is required to neutralize. He does not consider that this treatment is a specific for Basedow's disease, but believes that further observations are necessary to establish its value. He would also suggest the use of desiccated thyroidectomized milk in the form of tablets, as preferable to that in its natural state, and with these he is at present experimenting.

Postdischarge Mortality Among the Patients of the Adirondack Cottage Sanitarium.—The permanent or ultimate results of sanitarium treatment of pulmonary tuberculosis are discussed by L. BROWN and E. G. POPE (*Am. Med.*, November 19, 1904), who base their conclusions on statistics of 1,542 patients treated in this institution. The real test of this treatment is not the immediate, but the ultimate results. The lack of uniformity in classification renders the comparison or the combination of the results of various sanitaria extremely difficult. The classification on the "ability to work" is beset by so many difficulties in America, that it is rendered of little value. The mortality among patients discharged in various conditions affords the best method of studying the permanent results of sanitarium treatment. Of those discharged apparently cured, 93 per cent. of the expected living are alive; of the disease arrested, 65 per cent.; of the cases discharged with active symptoms, 23 per cent. The death-rate among the apparently cured patients is during the first ten years about three times the ordinary death-rate. The death-rate among the patients discharged with the disease arrested increases during the first few years to many (10 to 15) times the normal death-rate, but afterward decreases. Nearly half the patients discharged with an active disease, died in the first two years. Patients between 30 and 40, when discharged apparently cured, seem to relapse less than younger patients. This tendency is little, if at all marked among the patients discharged with the disease arrested. Incipient cases seem to relapse less than advanced, when both are dischaged in the same condition.

The Effect of Cold on the Arteries.—It is almost universally believed that the first effect of cold is to contract the arteries and that of moderate warmth, to relax them, but this has never been di-

rectly proven. Another point which has not been solved is, what is the condition of the vessels on either side of the part to which the stimulus is applied? An investigation of this character has been instituted by M. Herz (*Berl. klin. Woch.*, November 7, 1904) with Gärtner's method of recording the pulse. The lever of the instrument was adjusted to the middle of the forearm, and then cold applied either above or below this point in the form of an ether spray. The results failed to support one of the most accepted tenets of hydrotherapy, as it was found that the large artery which carries the blood from the place where the irritant was applied, to the point under observation the sphygmograph, failed to contract under the influence of cold. The pressure in the small arteries distal to the point where the cold is applied, rises, because these vessels retract in the tissues supplied by them. On the other hand, the tension decreases in the small arterial twigs, central to the same point, because these vessels dilate. When warmth was used instead of cold, the results were so inconstant that no conclusion could be formulated. The results of these investigations are summarized as follows: The application of cold does not influence the diameter of a large arterial branch. The tension in the minute branches peripherally situated, is increased by the contraction of the capillaries, while in the centrally disposed set of vessels the tension is diminished, because of the dilatation of the corresponding set of capillaries.

Serum Therapy of Snake Bite.—With our increasing territorial acquisitions in and about the equator, all these problems of tropical medicine become more and more important. George Lamb (*Lancet*, November 5, 1904) says that it has been shown for a considerable period that animals treated with the venom of poisonous snakes, such as the cobra, for example, yield varying quantities of serum, which is antitoxic toward that poison. Calmette was the first to produce an antivenomous serum in sufficient quantities for therapeutic purposes. This was prepared with a mixture of snake venoms, in which mixture, however, cobra poison greatly predominated. He claims that this serum was active against the venom of all species of snakes, a claim based on the conception that all snake venoms are alike in physiological action, and only differ from one another in their degree of toxicity. Not long after this, it was shown by the author in India and by Martin, in Australia, that this claim was fallacious. From a long series of observations and of experiments, the author comes to the following conclusions: (1) Antivenomous sera are markedly if not absolutely specific, even between the venoms of species of the same genus, hence in any case of snake bite the serum prepared with the venom of that series which has inflicted the bite must always be used. (2) The difficulties in collecting the poisons of different species of snakes in sufficient quantity for purposes of immunization are apparently very great. (3) Up to the present the only sera which have been used practically are the one prepared by Calmette and the one prepared at this institute with pure cobra venom. Both these sera are practically specific for cobra venom. (4) As the neutralizing power of these two sera is not great and as a cobra can inject a large amount of venom, the serum must be given in large quantities; as much as from 300 to 400 centimeters, even when given intravenously would be necessary in some cases. If given subcutaneously, from ten to twenty times this amount would be required. It should, therefore, always be given intravenously. (5) Experiments on dogs and the records of cases of cobra bites in man bear out these calculations. (6) It is evident from the above considerations that it is a question as to whether the advantages to be gained by the serum treatment of cases of snake bite are at all commensurate with the cost entailed in the preparation of the sera.

Cause of Glycosuria After Morphine.—A dose of morphine will frequently cause the appearance of sugar in urine; and if morphine be given to dogs the urine will frequently reduce copper and bismuth, turn the plane of polarized light and ferment. The amount of glucose is small, and rarely exceeds 5 to 6 pro mille, or about two grams per day. R. Luzzatto (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has discovered that this glycosuria is not caused by an increased permeability of the kidneys, as in the case of phloridzin, since the blood-serum contains considerably more glucose after morphine than normally. The influence of food is very slight, for glucose will be excreted if meat alone or meat plus sugar be given, and even during the fasting stage, if this is not prolonged beyond five or six days. After long-continued administration, a tolerance is established, the animal will no longer exhibit symptoms of poisoning, and glycosuria will not appear. Morphine, as well as chloroform, may act upon the medulla oblongata or the general nervous system, like the piqure of Bernard. Owing to this irritation, the liver will be freed of its glycogen, and this will then give rise to hyperglycemia and glycosuria. Or the glycosuria may depend upon an increased breaking down of proteids, or, lastly, the sugar may pass into the urine, owing to deficiency of oxygen. Morphine will increase the excretion of nitrogen, phosphoric and uric acids, but since the glycosuria stands in absolutely no relation to the degree of proteid decomposition, it is unlikely that the latter can be held responsible.

Phosphaturia.—Phosphaturia is a physiological phenomenon if it occurs after a large meal, after repeated vomiting or gastric lavage. In the following conditions, a pathological excretion of phosphates may occur: (1) In chronic inflammatory affections of the genito-urinary tract, particularly chronic gonorrhea. (2) In neurasthenia and other nervous diseases. (3) In chronic dyspeptic and rheumatic affections. In several cases observed in children, the following symptoms were noticed: Milky turbidity of the urine, emaciation, anemia, loss of appetite, headache, perspiration. Marked nervous disturbances were itching, paresthesiæs, pains in the joints, increased reflexes. Circulatory symptoms, such as palpitation of the heart, rapid pulse and murmurs were not uncommon and umbilical pain, diarrhea, mucoid stools and vomiting were observed. The discharge of urine was not interfered with, the amount and specific gravity were normal. Microscopically, amorphous and granular phosphates, occasionally triple phosphate, neutral phosphate of lime and oxalate of lime were found. The reaction was alkaline, amphoteric or faintly acid. Four possibilities may be quoted to explain the presence of these salts in the urine: (1) A deficiency of acid; (2) an excess of alkali; (3) an excess of calcium or magnesium; (4) a combination of the above factors. Physiological albuminuria is thus easily explained. After an excessive meal or

after gastric lavage, so much acid is removed from the stomach, that the blood is too alkaline. Vegetables, on the other hand, will increase the alkali in the blood directly, since they are rich in carbonated salts, while patients with genito-urinary disease often take large amounts of alkaline water and milk. Neurasthenics frequently suffer from chronic constipation, and for this reason consume large quantities of vegetables, which would easily account for the phosphaturia. There is, however, a separate class, where the phosphaturia is the primary condition. In children, at least, this is not really a phosphaturia, but a calcariuria, since the amounts of phosphoric acid voided are normal, but the lime increased, sometimes to five times its normal amount. The nervous symptoms are probably due to a retention of lime, since administration of lime will aggravate the condition, without affecting normal individuals. The treatment consists chiefly in the proper regulation of the diet. Potatoes, apples, cereals and meat are permitted, since poor in lime, but milk, eggs, leguminose vegetables, berries and fruits should be avoided. Meat may be allowed two or three times daily, together with butter and cream, much sugar and pastry. In intractable cases, rest in bed may do good. Muriatic and phosphoric acid have been recommended, but have little influence on the condition.

Importance of Iron in Animal Economy.—Iron is an element without which life would be impossible, and it is therefore not suprising that it has been detected in every organ of almost every animal and in a great variety of the higher and lower plants. Thus, A. Baldoni (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has detected an appreciable percentage in organs free from blood, such as the cornea, lens and vitreous body of the eye. The muscles and liver of animals not possessing hemoglobin, such as the lobster, are quite rich in iron. Finally, Iceland moss was examined to determine if this drug really possesses the therapeutical value in anemia so frequently claimed for it. The average figures obtained were only 0.0198 per cent. of the dried moss, which is about five times less than has been found by other observers.

Tubercle Bacilli in the Urine.—Rosenberger (*Am. Med.*, December 3, 1904) examined the urine tubercle bacilli in twenty-five cases of pulmonary tuberculosis, the residual urine being obtained by means of a sterile catheter. In no case was tuberculosis of the genito-urinary tract diagnosed or suspected, but the sputum always showed tubercle bacilli. Careful examination revealed a few, isolated tubercle bacilli in five cases. No clumps nor groups of bacilli were observed, as usually seen in cases of tuberculous cystitis, nephritis, etc. Intraperitoneal inoculations were made into guinea pigs, 2 c.c. of the sedimented urine being used. As a result of the inoculations three animals died, and in one of these no tubercle bacilli had been found in the urine of the individual. The surviving animals were kept under observation for three months and then killed; in not one of them was there any evidence of a tuberculous process. Rosenberger concludes that although the small number of cases scarcely warrants a positive assertion, still it is safe to say that in pulmonary tuberculosis the tubercle bacillus is found in the urine in only a very small percentage of cases.

Two Cases of Henoch's Purpura.—O. C. Smith (*Med. Rec.*, December 3, 1904) describes two cases of this disease. The first was that of a boy of nine, who developed purpuric spots on the legs and abdomen two days after a blow on the abdomen. In the course of the next week there were severe abdominal pains, the purpura became general, and the albuminous urine contained blood. Two weeks after the onset of the symptoms there was evidence pointing to intestinal obstruction, and a laparotomy was performed. The intestine was found collapsed and presenting many ecchymotic spots. The intestines were lifted up and douched with salt solution, and a quantity of this was left in the abdomen. Relief of the intestinal symptoms followed the operation, but a month later the patient died of the renal condition, which had not been improved by decapsulation of both kidneys. The other case, a boy of sixteen, presented symptoms in general similar to those of the first patient, and was also treated by laparotomy and filling the abdomen with salt solution. Improvement followed, and he was discharged cured four weeks later. From a consideration of the cases described in the literature, numbers of which presented abdominal symptoms, the author believes that Henoch's purpura should not be regarded wholly as a medical disease, and owing to the possibility of pathological changes in the stomach and intestinal walls, giving rise to conditions susceptible of surgical treatment, he considers that in cases presenting grave abdominal symptoms, exploratory laparotomy is not only permissible, but is indicated. An important deduction from the author's two cases is that in each one filling the abdomen with salt solution was followed by a reestablishment of peristalsis in the paretic intestine, and in the cessation of vomiting.

THERAPEUTICS.

Skimmianin, a New Alkaloid.—By a comparatively simple process, J. Honda (*Arch. f. exp. Path. u. Pharmak*, Vol. 52, Nos. 1 and 2) has succeeded in isolating skimmianin from *Skimmia japonica*, a plant indigenous to Japan. Injection into frogs, this alkaloid causes muscular spasm at the site of application, gradually extending to the neighborhood. The reflex irritability is first increased, then diminished, but the actual work done by the poisoned muscles is not increased. The pulse is slowed, even after atropine, probably due to direct action on the heart muscle. In rabbits the chief symptoms are opisthotonus, dyspnea and contraction of the pupils, which disappear rapidly after non-fatal doses. In chloralized animals a fall of pressure may be observed, which is due to direct action on the heart, while the subsequent rise must be ascribed to compensatory contraction of the peripheral vessels. The alkaloid behaves like a feeble base, but is not allied to caffeine, since it does not increase the working power of muscles and possesses no diuretic action.

Roentgen Treatment of Malignant Diseases of the Breast.—C. L. Leonard (*Am. Med.*, December 3, 1904) points out the analogy between the process of healing in atropic scirrhus of the breast, and that resulting from the Roentgen treatment. He believes that the indications for early thorough surgical removal of the malignant tissue and the adjoining lymphatics have not been changed by the advent of the Roentgen method of treatment. Roentgen treatment in malignant disease of the breast can as yet point to only one class of cases in which its use is indicated primarily. In this class surgical intervention is contraindicated by modern

pathology and clinical experiences. In all other cases, surgical removal of the breast with the tumor and the adjacent lymphatic areas is always indicated. Wherever possible an attempt should be made to remove the greater part of the malignant tissue, even though the operation can be only palliative. With the aid of Roentgen treatment even large ulcerating areas can be healed, while the toxemia is lessened and the Roentgen treatment facilitated. The value of the milliampèremeter, as a basis for comparing technic in radiotherapy, cannot be overestimated. Its invention makes a marked advance in treatment possible. The results obtained in favorable cases can be measured by this standard, and similar conditions can be produced in other cases, not only by the operator himself who produced them, but by any one possessing the requisite technic and apparatus. It will simply be necessary to know the dose employed in terms of standard dosage. Of the twenty-six cases of malignant diseases of the breast reported in his paper, the patients having been under treatment since 1900, twelve are dead and two, not heard from, are also probably dead. Nearly half the patients are living to-day. One, however, cannot expect to live more than six months. One has lived two years, and yet disease is certainly present. Nine remain apparently cured. Seven patients, or a large proportion, considering their condition when first seen, have lived over a year after their operations. This is not long enough to determine the permanence of the cure, but the results are encouraging, being better than those of the average operator, and the results obtained in some of these cases, even if the cure is not permanent, are enough to justify the employment of this method and to attest its value.

Nitroglycerin in Erysipelas.—This drug has been used with apparently good results by J. W. WHERRY (*Jour. Am. Med. Ass'n*, November 5, 1904). The cases were all well marked and the writer gave 1-100 gr. every three or four hours. An ointment of zinc oxide and ichthyol was also used, but this served merely to allay the discomfort. All these cases presented several features in common as the result of this internal treatment—a reduction of temperature, moist skin, good appetite, steady pulse after the first day, absence of prostration, and fairly rapid disappearance of the inflammatory process. The writer recommends it for further trial.

New Treatment of Rheumatism.—Injections of sterilized sodium salicylate, directly into the joints in articular rheumatism are highly recommended by A. SANTINI (*Wien. klin. therap. Woch.*, September 4, 1904). For the elbow-joint the needle is introduced obliquely above the olecranon, and for the knee by either side of the patella. In the hip and shoulder-joints it is often difficult to reach the interior of the joint; in such cases a periarticular injection is preferable. The strength of the solution should be three per cent., so as to be isotonic with the blood, and three to four cubic centimeters are usually sufficient. When the synovial cavity is distended with fluid, it may be advisable to withdraw a little serum. The only untoward symptoms noticed were a slight temporary increase of pain. In all cases a cure was accomplished much more rapidly than after internal or endermal use of salicylic acid

Synthetic Adrenalin.—Synthetic adrenalin, or at least synthetic substances acting like adrenalin or suprarenin, have been prepared by ROSER (*Pharm. Ztg.*, XLIX, p. 874), and described by H. Meyer at the International Congress of Physiologists at Brussels. The pharmacological investigation of the synthetic, chemically methylamino-ortho-dioxyacetophenon, showed that qualitatively it exhibited an effect exactly like that of suprarenin, not only so far as the peripheral vasoconstricting action following intravenous injection is concerned, but also as to the action on the smooth muscular fiber, and the causation of diabetes. It was further found that a series of homologous compounds (amino-ketones, ethyl-amino-ketones, etc.) exert a similar action.

PRESCRIPTION HINTS.

Hemorrhoids.—The internal variety are rendered painless for a period of from two to three hours by a suppository of the following:

℞ Orthoformi.	gr. xv	(1.0)
Ext. belladonnæ.	gr. i	(.06)
Ol. theobromæ.	q.s.	

Fiat in suppos. No. X.

Or, if there be a tendency to slight hemorrhage from minute fissures, etc.:

℞ Acidi gallici	gr. xv	(1.0)
Ext. opii	gr. i	(.06)
Orthoformi	gr. xv	(1.0)
Ext. belladonnæ	gr. i	(.06)
Ol. theobromæ.	q.s.	

Fiat suppos. No. X.

Gouty Headache.—This dyscrasiac condition is often difficult to overcome. Those patients with accompanying anemia being particularly refractory. The following prescription has given relief to many:

℞ Sodii phosphatis	gr. xv	(1.0)
Acidi salicylici	ʒ v	(20.0)
Ferri pyrophatis.	gr. lxxv	(2.3)
Aquæ.	q.s. ad ʒ vi	(180.0)

ʒ iv qr. four hours.

Palatable Syrup of Quinine.—*Merck's Report* gives the composition of such a syrup, as follows:

℞ Quinine sulphate	2 dr.
Cinchonine sulphate	2 dr.
Dil. sulphuric acid.	to dissolve
Oil orange.	to flavor
Saccharin.	8 gr.
Alcohol.	2 fl. oz.
Glycerin.	2 fl. oz.
Syrup.	to make 16 fl. oz.

Dissolve the quinine and the cinchonine in 4 fl. oz. of the syrup with the aid of the acid. Dissolve the oil of orange (or other suitable flavoring) and the saccharin in the alcohol and glycerin, and add this to the quinine solution; finally, add enough syrup to make the mixture measure one pint. Such a syrup is of value as a tonic in the malarial cachexiæ and in other adynamic conditions.

Multiple Warts.—Dr. Mantelin (*Merck's Report*) reports the case of a little girl of eleven years, who had had for three years numerous warts on her lips and hands; and these warts were completely cured in one month by the administration of 10 gr. of magnesia daily, and the following local application:

℞ Chloral.	90 gr.
Acetic acid.	90 min.
Salicylic acid.	1 dr.
Ether.	1 fl. dr.
Collodion.	4 fl. dr.

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SATURDAY, DECEMBER 10, 1904.

ERYSIPELAS: A MUDDLE.

FOR a number of years prior to 1901 erysipelas appeared in the reports of the New York Department of Health under the classification "Septic diseases," the group including erysipelas, septicemia, pyemia and puerperal fever. In 1901, for some reason not explained, the disease was removed from this classification, and in the last annual reports of the Department, erysipelas takes its place in the list of general epidemic diseases.

There have been no epoch-making bacteriological discoveries concerning erysipelas in the period referred to, and so far as we are aware, the Health Department has not recently introduced any new method having for its end the prevention of epidemics of the disease in question; in fact, erysipelas is a disease to which health officials, whether in New York City or elsewhere, pay but little attention. In this city the disease is nominally notifiable; but it is not one of those which physicians are really expected to report, and no official attempt is made to insure isolation or to control methods of treatment.

Obviously, the number of cases occurring in the course of the year cannot be stated. The death-rate, however, does not tend to increase, and it would appear from a study of the following figures that the easy official attitude toward erysipelas has not proved inimical to the public welfare:

Year.	Number of Deaths Due to Erysipelas.	Estimated Population of Greater New York.
1899	230	3,550,053
1900	316	3,444,675
1901	198	3,536,517
1902	186	3,632,501

The practice of hospitals in this city regarding erysipelas reveals an interesting state of affairs. Bellevue Hospital, with its erysipelas ward of 20 beds, 10 for men and 10 for women, represents the only special provision made by or in the city for the treatment of the disease. The private charitable hospitals do not admit cases of erysipelas, and cases developing in their wards are, in many instances, transferred to Bellevue Hospital for treatment. Some hospitals consider isolation to be indispensable in all cases; others take alarm when the disease develops in surgical wards, but are indifferent when it makes its appearance among medical cases. In the smaller private hospitals, cases of erysipelas are not openly accepted, but are often secretly admitted under other names.

The variation in the practice of institutions reflects the uncertainty of the medical mind on the subject in question. Abbott, in his "Hygiene of Transmissible Diseases," makes no mention of erysipelas; the omission can hardly be accidental. W. Gilman Thompson, in his "Practice of Medicine," describes erysipelas as a distinctly contagious disease, and urges extreme measures of precaution upon those who have been in contact with cases. His recommendation that physicians who have handled erysipelas subjects "should not visit puerperal or surgical cases for several weeks," aptly illustrates the dread of the disease which, if not general, is at least widely shared. These citations are purposely drawn from textbooks in actual use in representative medical schools. In a practice of several years, in one of the large hospitals of New York City, we have not once seen a clear case of the direct transmission of erysipelas from one patient to another, either in the medical or the surgical wards. But older surgeons are thrown into wild alarm at the sight of the dread eruption, recalling the fatal epidemics of their younger days. Content with the precautions commonly taken in large surgical wards, where clean cases and pus cases are treated side by side, surgeons will calmly disre-

gard the presence of streptococcus in the ward until, in a susceptible case, erysipelas appears; at that moment the case becomes one to be shunned, though the wound conditions and the chances of infection are unchanged.

The correct handling of cases of erysipelas is a practical clinical question, which has not been made clear by bacteriological research. At present the disease cannot be said to be epidemic; but it is important enough to merit greater attention on the part of the Health Department, through whom, more readily than by any other means, the practice of hospitals and the profession in regard to the treatment of the disease can be placed on a sure and sane footing.

VACCINE VIRUS AND CHLOROFORM.

During the epidemic of smallpox, in recent years, so much vaccine material was called for on several occasions that a sufficient amount of it was not on hand duly prepared for distribution. As a consequence, in some few cases, vaccine virus insufficiently glycerinated, that is, which had not been subjected for a sufficient period to the antiseptic action of glycerin, was distributed. As can be readily understood, this carried with it a certain danger of infection, because many of the micro-organisms in the vaccine material had not been destroyed. Sore arms were the result with an obscuration of the effectiveness of the vaccine material, since the mere occurrence of a deep scar does not by any means give evidence of successful protective vaccination, but rather of secondary infection.

There has been a growing impression for some time that if another agent besides glycerin could be employed, which without eventually impairing the efficiency of the vaccine material, would destroy all other germs present, it would be an important discovery and would fill a distinct want.

Such a material seems to have been discovered in chloroform. In a recent report, Dr. Alan B. Green, of the English government lymph laboratories, said: "Since April, 1903, the date of my preliminary note on this subject, the preparation of calf vaccine by the chloroform process has been carried on at these laboratories, and a large number of vaccines have now been treated by this method. These lymphs have been freed from their non-spore-bearing extraneous bacteria within a period ranging between one and eight hours after their collection from the calf and have, subject to the usual tests, been issued for general vaccination purposes about two weeks after collection. Their use has resulted in a large proportion of successful vaccinations."

This very favorable report has been confirmed by some experiments in the Health Department of Chicago, as reported in the recent bulletin of that Department. According to the crucial tests made in Chicago, chloroform-vaccine was used by the municipal health board physicians five days after it was removed from the calf. One day was required to prepare it, one day to ship, two days to test it bacteriologically, and one day to send it to the clinician who made the clinical test. Ten days later his report was that this chloroform vaccine material had given 100 per cent. of successful primary vaccinations. Besides the rapidity with which the vaccine may be prepared, there is another and decided advantage in that the length of time during which the vaccine matter remains active is considerably prolonged. Under the action of glycerin, foreign micro-organisms present are soon destroyed, but the organisms of vaccine are rendered inert after a time and, consequently, unused vaccine has to be withdrawn from the market. With chloroform, the action may be allowed to continue until all foreign micro-organisms are destroyed, and then no further action takes place. Consequently there is thought to be no deterioration of the vaccine material.

These are as yet only preliminary reports, although the tests to which the material has been subjected are distinctly sufficient to justify very hopeful conclusions. Vaccine material in its purest possible state, without admixture of any foreign living material, especially, is a supreme desideratum of modern times. Since the medical profession is insisting on the necessity for every individual being vaccinated, and since, as a consequence of this insistance, laws have been passed in most of the civilized countries of the world practically making vaccination compulsory, it is an absolute necessity that vaccine material should be prepared in such a way as to carry with it no danger except the infinitesimal risk involved in the vaccination process itself. The new agent seems to promise a notable advance along these lines, and, therefore, its possibilities should be exploited with the greatest care. Vaccine manufacturers may be depended on to be properly enterprising in this as they have been in the past, and the medical profession must be ready to weigh further demonstrations in the matter.

MEN OF SCIENCE.

THE third of the annual meetings of "Convocation Week" will be held in Philadelphia from December 27 to 31, in the ample buildings of the University of Pennsylvania. Twenty-five different scientific societies will combine to make that locality during that week the center of American philosophy and science. The associations of scholars which will be represented are the ten chapters of the American Association for the Advancement of Science with their more than four thousand members; the American Philosophical Association, Psychological Association, Physiological Society, Anthropological Association, Chemical Society, Folk-Lore Society, Physical Society, Society of Naturalists, Society of Zoologists (Eastern Branch), the Association of American Anatomists, the Association of Economic Entomologists, the Astronomical and Astrophysical Society of America, the Botanical Club of the A.A.A.S., the Botanical Society of America, the Entomological Club of the A.A.A.S., the Fern Chapter, the Geological Society of America, the Societies of American Bacteriologists, for Horticultural Science, for Plant Morphology and Physiology, for the Promotion of Agricultural Science, the Sigma Xi Honorary Scientific Society, the Sullivant Moss Chapter, and the Wild-Flower Preservation Society of America. The chapters of the American Association for the Advancement of Science represent, respectively: A, mathematics and astronomy; B, physics; C, chemistry; D, mechanical science and engineering; E, geology and geography; F, zoology; G, botany; H, anthropology; I, social and economic science; and K, physiology and experimental medicine.

This truly rather formidable list is given in full to emphasize the variety of learned and cultural interests which meet annually just after Christmas in some one of our important cities for mutual mental improvement and intellectual enjoyment. And these great meetings, characteristic of American democracy, give even more than that, for they allow former friends, schoolmates, colleagues, sundered by academic appointments and by other means, to meet under sympathetic conditions and where each one has for the few days left his burdens behind him that he may partake of the other, but unlike mental burdens of his fellows! These meetings afford the recreation which variety and a journey bestow, and no one better than the physician knows how a week or four days out of the middle of his busy winter would cheer his soul for the months to come.

It is often far too easy for the practitioner to make even himself believe that his "practice will not allow him to get away," that he "can't afford the time," etc. Observation shows that the men who accomplish most are not the "grinds" of the world and that proportionally to the mental difficulty of their pursuits the more thought there is in an occupation the more necessary is a degree of independence of routine and a fair proportion of recreation. It is on this substantial basis of physiology, that the conscientious physician owes it to his patients not less than to himself and his family to escape occasionally into an atmosphere at least different from that he daily breathes.

Now it would be natural at first for many medical men to say that at such a meeting they would be engaged in only what they need change from, namely, science. A glance over the list shows one, however, so large is the variety of interests concerned that the physician may indulge in the science in which he is an amateur with reason and with benefit. The American Association for the Advancement of Science welcomes new members from the medical profession, and offers them practically the whole range of science to choose from. Fortunate, the busy practitioner who has geology for a hobby and who, therefore, finds himself time every summer for a month in Nova Scotia or among the White Hills. Wise is the busy physician who, despite the jokes of his daughters and the sly reproaches of his neurasthenic women patients, builds up an herbarium of his own, collecting between Texas and Labrador. To the philosophically minded there is plenty to be heard at these meetings which would make his cortical neurones vibrate in a way to delight Forel himself, were not "the neurones" things of the past. The Anthropological Association and the Folk-Lore Society discuss matters of absorbing interest to every physician. None of these societies is apt to refuse membership to the medical graduate who applies, seriously intending to contribute to its advancement.

The monetary cost is small. The railroads furnish a round trip for one-and-one-third fares. The hotels pretend at least to reduce their rates. The entrance fees and the annual dues are nominal, and in most cases return rather more than

their value in literature. Thus every member of the American Association for the Advancement of Science paying the dues of three dollars a year, is entitled to the weekly magazine, *Science*, as the official journal of the Association.

One has much to gain and little, broadly speaking, to lose, if he attends these annual meetings held East or West for four days after each Christmas. Besides his personal gains (and his wife's, if he has one and she goes along), the physician has the pleasure of feeling that he is contributing to the interest and influence of science in America. This is no mean benefit when one considers the predominant part which science has taken, and is more and more largely taking in the development of our country and of the world. The practitioner of medicine, like other men, is apt to get into ruts from which it is a fact of general experience that the majority never escape. These enthusing meetings of the scientists of America offer one way out. It is not too late for many to join the large but harmonious scientific family party, at the University of Pennsylvania on the second day after Christmas. Physicians are apt to forget that with all their art, the practice of medicine makes them men of science—every one.

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Pritchard.—Dr. W. B. Pritchard has been appointed Professor of Neurology at the Polyclinic Hospital and Medical School, to occupy the chair recently vacated by the resignation of Dr. B. Sachs.

Zoological Pitfalls.—The Middleton Goldsmith lecture of the New York Pathological Society was delivered at the New York Academy of Medicine, on November 30, at 8:30 o'clock, by Dr. Charles Wardell Stiles, chief of the Division of Zoology, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service. The subject was: "Zoological Pitfalls for the Pathologist." A full analysis of the lecture will be given later.

Pan-American Delegate.—Dr. Frederick Holme Wiggin has been appointed a delegate to represent the New York State Medical Association at the coming meeting of the Pan-American Medical Congress, to be held in Panama.

Sanitary Conference.—The Fourth Annual Conference of Sanitary Officers, under the direction of the State Department of Health, will be held in the Assembly Chamber of the Capitol at Albany, December 15 and 16, 1904. For the purpose of securing a uniform system of sanitation, and increasing the efficiency of local boards of health, this department is anxious to secure the attendance at the conference of as many health-officers and registrars as possible. Under Section 21 of the Public Health Law, local boards of health are authorized to allow the reasonable expenses of health-officers in "going to, attending and returning from the Annual Sanitary Conference of Health Officers."

Report of Presbyterian Hospital.—A summary of the work done at the above institution during the past two years has just been issued. Especial prominence is given to the financial statement which states the great need of more money to carry out plans for more efficient service. The cost per day per patient was $2.48⅓, as compared with $2.50⅔ during the previous year. The actual cost to the hospital of free treatment during the year was $150,110.66, as compared with $149,984.43 for the previous year. The most important event in the hospital life of the past year has been the opening of the Florence Nightingale Hall, the school for nurses, on Seventy-first Street, which, fully equipped, cost $410,000. It was given anonymously by one of the managers. Transfer of the nurses to their new building has vacated the ward space in the hospital previously occupied by them. This would provide more than 100 beds for that number of new patients. These wards must remain closed and the beds unoccupied until current and continuing means for their support are provided.

Rockefeller Research Laboratory.—The cornerstone was laid last week for the Rockefeller Institute, which was founded by John D. Rockefeller, Sr., with an initial endowment of $200,000, since increased to $1,200,000, and the promise of more when needed. The institute was founded for pure research into the cause of disease. For several months this research has been carried on by students in this city and other cities. Dr. Simon Flexner, the chairman of the governing board of the institution, has gathered about his a carefully selected body of men, all of whom are known in some branch of medical science. The trustees a year ago bought a site on a tract of land lying along the East River from Sixty-fifth to Sixty-eigth street and extending back to Avenue A. This tract belongs to Mr. Rockefeller. The site was purchased from him with the money he had supplied, and is not an additional gift to the institution. The cornerstone laid in Sixty-fifth Street near Avenue A is for a laboratory in which special investigations of the bacteria of disease will be carried on. The stone was laid by Dr Flexner, assisted by the other officers of the institute, T. M. Prudden, professor of pathology at the College of Physicians and Surgeons; Dr. L. Emmett Holt, secretary of the institute, and Dr. C. A. Herter, treasurer of the institute and professor of pharmacology at the College of Physicians and Surgeons. Within the cornerstone were placed a photograph of Mr. Rockefeller, a history of the organization of the institute, copies of the current medical magazines and daily papers. There will be a public dedication ceremony when the building is completed. A small hospital will be built in the next two years. The few patients admitted to this hospital will receive the best of care and benefit of the most recent advances in medical science, but they will be used as subjects in the study of the causes of disease for which the institute has been endowed. While waiting for the new building the Rockefeller Institute has temporary quarters at Fiftieth Street and Lexington Avenue, where experiments are being carried on under the direction of Dr. Flexner.

National Mosquito Extermination Society.—The second annual convention of this Society will be held in Manhattan and Brooklyn on Thursday and

Friday, December 15 and 16, 1904. The public is invited to attend. The program is as follows:

First Session, December 15, 2:30 P.M. To be held at New York Aquarium, by courtesy of the Director, with the approval of the New York Zoological Society. (The Director will provide exhibits of living specimens showing the hatching of mosquitoes, and the various small fishes important as the destroyers of mosquito larvæ. He is now making experiments with a view to showing the comparative value of certain species of fishes in this connection. The Aquarium is easily reached by all surface and elevated lines to Battery Place.) Greetings from Major Ronald Ross, M.D., of Liverpool, England, recipient of Nobel Prize for discoveries of relation between certain mosquitoes and malaria. "Criminal Indictment of the Mosquito," submitted by Frank Moss, Esq., Counsel for Society for the Prevention of Crime. Submission by the audience of proposed Essential Questions to be asked later of the Advisory Board of Entomologists; their answers to be unified into a "Creed on Mosquitoes."

Second Session, December 15, 8 P.M.—Dr. L. O. Howard, Chairman; joint Session with Brooklyn Institute of Arts and Sciences, to be held in the Art Rooms, 174 Montague Street, Brooklyn. Paper by Col. Wm. C. Gorgas, M.D., Asst.-Surg.-Genl., U. S. A., in charge of "The Sanitation of the Panama Canal Zone," on this work. Address by Dr. E. Porter Felt, N. Y., State Entomologist, "Diversities Among New York Mosquitoes," illustrated by a large number of original lantern slides, representing various species in all stages and their differences.

Third Session, December 16, 2:30 P.M.—In conjunction with the Brooklyn Institute, in Hall, first floor, 502 Fulton Street, Brooklyn. Remarks of Chairman, Dr. John B. Smith, New Jersey. Representation of the Public Health and Marine Hospital Service. Dr. Walter Wyman, Surgeon-General, Dr. M. J. Roseneau, Director Hygienic Laboratory, Washington, subject: "Methods of Examination and Dissection of Mosquitoes for Parasites," (illustrated with many striking lantern views). Address by Dr. Thomas Darlington, Health Commissioner: "What New York City is Doing and Might Do toward Mosquito Extermination."

Third Session, December 16, 8 P.M.—By courtesy in the Hall of the American Institute, Berkeley Lyceum, 19 and 21 West Forty-fourth Street, Manhattan. Remarks by the President. Address by Dr. Quitman Kohnke, President Board of Health, New Orleans, La., on "The Mosquito Question." Illustrated by colored lantern-slides made from drawings, photographs, micro-photographs and diagrams, and by moving pictures, including mosquitoes in life and in asphyxiation by oil on water. Paper by Cornelius C. Vermeule, C.E., Consulting Engineer of the New Jersey State Geological Survey, etc., on "The Relation of Mosquito Extermination to Engineering and Public Improvements."

PHILADELPHIA.

Reception to Dr. Chapin.—The completion of fifty years' work among the insane was the occasion of a testimonial dinner to Dr. John B. Chapin, Superintendent of the Pennsylvania Hospital for the Insane, on December 1. The dinner was given in the Clover Club room of the Bellevue-Stratford and was attended by more than 75 physicians. Among the guests were the assistant physicians in the hospital, the board of managers and the trustees. A large oil painting of himself was presented to Dr. Chapin as a testimonial of the regard felt for him by the profession. The presentation was made by Dr. Henry M. Hurd. Dr. E. N. Brush presided at the meeting and the following toasts were given: "Dr. Chapin and His Fellow Physicians," Dr. James C. Wilson; "The Law and the Doctor," Mr. James M. Beck; "The Physician and the Christian Gentleman," Rev. Stephen W. Dana, and "The Pennsylvania Hospital," Mr. James T. Shinn. The esteem in which Dr. Chapin is held by those outside of the medical profession is well shown by an editorial in the Philadelphia *Press*. In speaking of the revolution in the care of the insane, started by Dr. Chapin, it says the entire treatment and housing of the insane has been changed. "It has substituted separate small buildings for the large palatial structures once built. It has recognized the vital difference between the chronic and curable insane. It has relied upon a healthy environment and opportunities for work as equal in importance with medical treatment. Above all, it has looked upon the insane not as those set apart from their fellows but as patients, requiring indeed special precautions but demanding also the medical care, the individual treatment and the special individual environment, required by all the ill and ailing. This treatment substituted the hospital for the asylum and the cottage for the great dormitory. It brought greater comfort for the chronic and a greater percentage of cures for the curable. In this advance, which he began almost alone, nearly forty years ago, Dr. Chapin has steadily led, and the work which he has done in this city, at the head of one of its most important institutions, is one of the many claims of Philadelphia to be the center of the medical advance."

Nurses' Home Presented to Hospital.—Mr. and Mrs. Horace Brock, of Philadelphia, have presented to the Good Samaritan hospital, of Lebanon, a nurses' home costing $7,500.

Special Lectures for the County Medical Society.—The second in the series of special lectures for the Philadelphia County Medical Society will be held December 21, at 8:30 P.M. Dr. William G. Spiller will speak on "The Diagnosis of Tumors Implicating The Intracranial Portion of the Visual System," and Dr. Allen J. Smith on "Terminal Atony of the Large Intestine."

The Use of Methylene Blue in Malarial Fevers.—At the County Medical Society, November 9, Dr. H. C. Wood, Jr., read a paper on this subject and reported the use of the above drug in seven cases of malaria. One was complicated by typhoid fever and the effect of the methylene blue cannot be judged. Of the remaining six, three were tertian and three quotidian in type. In all six there was cessation of symptoms and disappearance of fever as a result of treatment; in four there was at least one distinct rise of temperature after the drug was begun. One relapse occurred but readily yielded to treatment. Altogether the results were extremely gratifying. Wood believes, from these cases and the reports of many more in the literature, that in methylene blue we have an antiperiodic that rivals quinine in power and which in many cases is to be preferred to that alkaloid on account of its freedom from unpleasant by-symptoms. He employs the drug simply by giving two or three grains every three hours for a period of a week

to ten days and then making the withdrawal a gradual one. The failure to continue the treatment over a period of several weeks has been the cause of many of the relapses recorded. In answer to the point raised in the discussion that methylene blue was a sedative, Dr. Wood said he observed no signs whatsoever of this action of the drug in his cases.

University of Pennsylvania Notes.—The completion of registration figures for the University of Pennsylvania shows that the dental department is the most cosmopolitan of all the schools. A few of the countries represented are China, England, France, Germany, Russia, New Zealand, Switzerland, Africa, Japan, Holland, and the East and West Indies. Nearly 20 per cent. of the 358 students enrolled are subjects of Great Britain, thirty-three of them being from Australia. The school prints annually a catalogue in several foreign languages. The department has in its post-graduate school Dr. T. Okumura, professor of dental anatomy and histology in Tokio Dental College. He is the author of several Japanese works on dentistry, and has secured a two years' leave of absence, to be spent here in studying the modern methods of the science. The old medical laboratory has been renovated and will now be known as the "Robert Hare Laboratory of Chemistry," to be used for all medical students in their study of chemistry. The faculty of the Wharton School has arranged for a series of lectures on "The Selection of a Profession."

Pennsylvania State Medical Examination.—The official report of the Pennsylvania State Medical Board shows that the graduates of the University stood second in the number of successful candidates at the recent State Board examinations. The Women's Medical College of this city made the highest average.

CHICAGO.

Resignation of Dr. Woelfel.—Dr. Albert Woelfel has resigned his position in the Memorial Institute for Infectious Diseases, Chicago, to accept an appointment in the Department of Physiology, of University of Chicago.

Inspect New Hospitals.—The Cook County Hospital Advisory Committee recently inspected the new hospital for contagious diseases and the new hospital for children, which, it is said, will not be finished until January. Besides the members of the Hospital Committee, members of the other advisory committees of the County, County officials, charity workers and many others were invited and participated in the inspection.

Delay Merit Test for Physicians.—Although the civil service examination for candidates for the attending staff of the Cook County Hospital was announced for December 1, it has been in effect indefinitely postponed, pending an opinion of the County Attorney, to whom the question of the legality of the test has been referred by the Commission. The sentiment of those who favor the examination is that the matter has already been decided. When President Foreman of the County Board of Commissioners vetoed the action of the County Commissioners in rescinding their former action in favor of the examination he presented with the veto an opinion from the Assistant County Attorney, on which his veto was based.

A State Health Board Propaganda.—We have received from the State Board of Health of Illinois a large well-printed poster issued by them and distributed throughout the State to be the means of educating the people as to the dangers of smallpox and that it is prevented by vaccination. It shows a number of graphic illustrations of patients suffering from smallpox and is accompanied by straightforward text as to the methods of vaccination. We should like to see more posters of this kind distributed throughout rural communities not only regarding smallpox but other communicable diseases as well. Here is a field now being let slip my many health departments, to be cultivated by manufacturers. The guinea-pigs and exhibition of sera of Mulford's, now shown in many of the large cities, are well devised and instructive. Propagandas of this kind are worth while and money spent in this way is as much more productive of good results than by the sending of health board statistics to readers who are not interested. We commend to the National Tuberculosis Association this movement as a useful piece of detail to be followed and improved upon.

GENERAL.

Harvard Medical School Buildings.—Work on the new Medical School buildings at Brookline has been progressing steadily this fall. Of the five structures, that for the Hygiene and Pharmacological Departments is nearest completion, the rooms being already plastered and ready for rough flooring. The Bacteriological and Pathological Building is ready for plastering and the roofs of the buildings for Physiology, Physics and Chemistry and for Anatomy and Histology, are all but completed. The Administration Building is the least advanced of the five, since it was desired primarily to put the laboratory buildings in condition to withstand the winter. Whether or not the buildings will be completed next summer, according to the terms of the contract, depends upon the severity of the coming winter.

Free Service of Dental School.—During the past six years the Dental School has maintained a free service for the sick poor of Boston, and has been prepared at all times to send a dentist to relieve such persons, either at their own homes or in the hospitals. This service has been recently extended in order to be of greater efficiency than heretofore. Th school is now able to send one of its graduates, registered by the State board of registration, to relieve the pain of any sick poor person who is in need of immediate dental treatment. More extended treatment is postponed until the patient is able to visit the infirmary of the Dental School.

Crippled and Deformed Children in Massachusetts.—Governor Bates sent to the executive council to-day the appointment of these five trustees of the Massachusetts School and Home for Crippled and Deformed Children, the establishment of which institution was authorized by Chapter 446 of the Acts of 1904: Dr. Edward H. Bradford, of Boston (chairman); William Endicott, Jr., of Beverly, Hon. Alfred S. Pinkerton, of Worcester, Dr. William A. Morrison, of Boston, and Leonard W. Ross, of Canton. The act under which these trustees are appointed empowers them to purchase land and erect buildings for a home to hold not less than three hundred children, officers, employees and attendants, and to furnish and equip the same at a maximum cost of $300,000, the plans to be subject to the approval of the governor and council. The trustees are to receive no compensation for their services, but shall be reimbursed for all expenses actually in-

curred by them in the performance of their official duties. The State Board of Charity is to have general supervision of the institution, and may, when so directed by the governor, assume and exercise the powers of the trustees in any matter relating to the management thereof.

Suffolk District Branch Massachusetts Medical Society.—The last meeting of this branch of the Massachusetts Medical Society, in conjunction with the Boston Medical Library, was held November 30, 1904, at the Library. The subject for discussion was "Ptosis of the Abdominal Organs, with Especial Reference to Ptosis of the Kidney." Dr. P. B. Harrington was in the chair.

Dr. M. P. Southwick first spoke on "The Importance of Keeping in Mind Ptosis of the Viscera, in Considering Treatment of the Kidney." He mentioned various conditions which had been given as causes of ptosis of the kidney; childbirth, tuberculosis, trauma, etc.; but said it was necessary to go back of this to a neuropathic condition, of low nerve power, in which the point of least resistance was attacked, whether this be a retroverted uterus, cardiac or stomach neuroses, flatfoot or other orthopedic conditions, or a movable kidney. In his private practice, out of sixty-eight cases with a movable kidney, half that number had retroverted uteri. Many of his cases showed no symptoms of the kidney conditions. Others only general neurasthenic symptoms. He mentioned the rarity of real renal colic, and of cases of movable kidney, where the symptoms seemed to point definitely to that region.

Dr. W. H. Smith spoke on "Experience with Abdominal Supporters." He described two kinds of belts; one a plain abdominal band, which he had used but little, the other an accurately fitting, padded, corset-like belt. He then described in detail two cases which had been greatly benefited by such a belt as last described, and then another case not improved because the belt was put on with the patient standing, thus increasing rather than diminishing the pull on the kidney. In cases of general neuroses he did not advise the belt, nor in patients with gastroptosis. He emphasized the fact that belts would, in his opinion, do good only with the intelligent cooperation of the patient and in carefully selected cases.

Drs. Frank Balch and James Torbert next described the results of operation on movable kidneys at the Massachusetts General Hospital from 1890 to 1904. Out of 92 cases 41 replied to letters sent out, and out of these 28 were relieved and 13 not. The majority could give no definite cause for their condition; many attributed it to childbirth, a few to trauma; 86 were females, 6 males. In many cases additional operations had been done later on the gall-bladder or the appendix, rendering their reports unreliable. They spoke of the necessity of carefully choosing cases with real kidney symptoms. In such cases an operation might do good, in cases of general enteroptosis it would not.

Dr. R. G. Gordon gave a report of 17 cases from the Boston City Hospital during the last ten years, out of which he had had a personal interview with ten. They were all women, but of these two were operated on later for gall-stones; five were definitely cured and able to do their work without the slightest trouble, the rest were either unrelieved or only slightly improved.

In the discussion which followed these papers, Dr. H. D. Chadwick, of Waltham, spoke on the symptoms of movable kidney, which, in his opinion, required surgical relief. He had no success with belts, and did not believe a belt could pad the kidney. Out of twenty operations he considered only three to be failures.

Dr. A. T. Cabot said that comparatively little was as yet known as to the cause and symptoms of movable kidneys. The gravity of the symptoms did not in the slightest accord with the amount of movability of the kidneys, often quite the reverse. He thought it depended on the tolerance of the central nervous system to little irritations. He spoke of the anatomical conditions present, that the short right renal vein might be more easily shut off than the longer corresponding renal artery, thus causing a chronic congestion. He thought that an operation done early was far more apt to benefit the patient than a late one, as secondary changes due to chronic passive congestion were then not given a chance to take place. Silk he considered better for the operation than any soluble suture material. He fastened the kidney just high enough so that it was not pressed upon by the liver.

Dr. Paul Thorndike thought that the large numbers of cases done and reported by men of little surgical experience in the past accounted for the large per cent. of failures. Out of 272 cases 91 reported in the out-patient department; 112 had movable kidneys without any symptoms. In many cases symptoms are coincident with and not the result of a movable kidney. He had no success with belts.

Dr. A. K. Stone spoke of the confusion of terms as regards this subject, and the necessity of distinguishing between the palpable kidney, which is almost a normal condition, and a real movable kidney. He mentioned the occurrence of acute cases due to extra strains onthe nervous system as on the back where the kidney was already movable, but had up to then given no symptoms. With belts he had good success where an operation advised had been refused. He thought the belt must be very carefully fitted and treated as any complicated orthopedic apparatus.

Dr. W. B. Conant spoke of the position of the kidney in the body and how to preserve this natural condition on operation, also on the frequency of some trouble with the appendix in these cases. He used the lateral incision for this operation, thus exploring the entire abdomen.

Dr. R. C. Larrabee spoke of his out-patient experience with these cases and mentioned that in a large number of patients found to have movable kidney, the symptoms were as common in those who did not know they had a floating kidney as in those who did.

Drs. Stevens, Lund and Gay also spoke on this subject.

At a clinical meeting of the Medical Board of the Massachusetts General Hospital held December 2, 1904, Dr. F. B. Harrington spoke on angioneurotic edema, going carefully over the etiology and pathology of this condition, especially as regards the abdominal crises occurring during the attack. He mentioned its hereditary tendency; its relation to the other neuroses as urticaria, purpura, etc., and gave in detail the symptomatology of the abdominal crisis, and then described a case where a laporatomy had been done and a localized edematous swelling of the gut found near the cecum.

In the absence of Dr. R. H. Fitz, his house officer, Dr. Floyd, demonstrated a case of typhoid hematoma involving the rectus muscle occurring in a very severe case of enteric fever when restraint had been necessary by a sheet across the abdomen. The differential diagnosis between this and phlegmon was carefully considered.

Dr. George Waterman read extracts from a paper on cases illustrative of the differential diagnosis between epilepsy and hysteria.

Dr. C. S. Scudder demonstrated the Connell suture, as used by him in gastric and intestinal surgery.

Dr. W. H. Smith demonstrated for Dr. C. S. Shattuck relaxation of abdominal muscles of patient examined in a warm bath, and cited cases where this procedure had been of distinct advantage as an aid to diagnosis.

Dr. Fred Lord read a paper on Flies and Tuberculosis. He went over the literature of this subject, and then described his own experiments on flies fed on tuberculous and non-tuberculous sputum, with subsequent examination of the excreta as found in fly specks and of the intestinal contents themselves.

Dr. A. K. Stone read a paper on the "Value of X-ray in Phthisis," showing where he found it of use and how very misleading it was in certain instances.

American Academy of Ophthalmology and Oto-Laryngology.—This Society will hold its next meeting in Buffalo on August 23, 24 and 25, 1905. President, H. W. Loeb, St. Louis, Mo.: Secretary, George F. Suker, Akron, Ohio.

Pollution of Inland Waters.—A review of the laws forbidding the pollution of inland waters in the United States, writes *Science*, has been prepared by Mr. Edwin B. Goddell for the United States Geological Survey. It is published as No. 103 of the series of Water-Supply and Irrigation papers. Mr. Goodell's purpose has not been to prepare a complete work on water pollution for the use of members of the bench and bar, but rather to put into the hands of public officials, legislators, water companies, manufacturers, farmers and others interested in the subject, a guide for their action, and to furnish references to the sources from which a more exhaustive knowledge of the subject may be obtained if required. No attempt has been made to present a detailed statement of the entire law against water pollution as it exists independently of statutes, but the broad legal principles under which antipollution statutes become operative are explained and important court decisions are quoted to show authority for various deductions. These principles and decisions have been classified and are presented in three groups: (1) The rights of riparian owners to pure water as against one another; (2) the rights of the public (as distinguished from individual owners) to have inland waters kept free from pollution by riparian owners or others; (3) the conditions under which, and the extent to which, public municipalities may use inland waters in the disposal of sewage matter from public sewers. The statutes enacted in various States are classified according to their general scope and an opportunity is thus afforded to compare their effectiveness and desirability. In some states there is nothing more than a simple provision making it a crime to poison wells and springs, while in others elaborate provisions have been made to check and, so far as possible, absolutely prevent all pollution of all waters by the refuse products of animal life or the waste of human industry. In citing the statutes, Mr. Goodell has grouped the States together logically to show the stage of growth in sanitary education at which each has arrived. It is hoped that the publication and distribution of this paper will help to bring about a general apprehension of correct principles upon the important subject of water pollution.

OBITUARY.

Dr. Jacob P. Bixler, a well-known physician, died at Carlisle, Pa., last week from paralysis. He was sixty-three years old. In 1866 he was graduated from Jefferson Medical College, Philadelphia. He was a member of the Pennsylvania State Medical Society, and for many years he was president of the Carlisle school board.

Dr. William E. Carroll, of Newark, N. J., died December 2, at St. Michael's Hospital in that city, of pneumonia. He was a member of the staff of the hospital and for years had a large private practice. Dr. Carroll was born in Newark fifty-seven years ago.

Dr. William F. Cushman, for many years a practitioner of medicine in New York City, died last week at his country place, at Ridgefield, Conn., aged sixty-six years. He was a member of a well-known family, which for many generations lived in the Chelsea village district of Manhattan. Dr. Cushman was graduated from Columbia University and from the College of Physicians and Surgeons, and was for many years treasurer of the New York Academy of Medicine.

Dr. Leonard F. Pitkin, surgeon to the Interborough Company, New York City, died last week at St. Luke's Hospital. Dr. Pitkin was taken ill last spring, and had to retire temporarily from the practice of his profession. He spent most of the summer in the country, and returned two months ago apparently much improved. Tuesday he became so ill that he was removed to St. Luke's Hospital. He was suffering from kidney disease. Dr. Pitkin was born in Hartford, Conn., in 1858. His family is one of the oldest and most prominent in New England. He came to New York twenty-five years ago, and built up a large general practice, being connected as medical adviser with several corporations. He was the physician who attended all subway cases since that work began.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

BIRTHDAY HONORS—THE QUEEN OF PORTUGAL—THE HEALTH OF THE KING AND THE PRINCE OF WALES—A NATIONAL COLLEGE OF PHYSICAL EDUCATION—THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION—THE UNIVERSITY OF LONDON AND RACE DETERIORATION—DEATHS IN THE PROFESSION.

London, November 19.

The list of birthday honors issued on November 9 contains the names of only three or four members of the medical profession, not one of which probably has reached your side of the Atlantic. The best known of them is Mr. Shirley Murphy, Medical Officer of Health for the County of London, a meritorious official who has somehow failed to do all that was expected of him when the new administration of London, of which he is a part, came into being. He is a sound hygienist, but somehow gives the impression of irresolution in action and general indefiniteness of opinion. Hence his services, valuable as they are, have always been imperfectly appreciated by the Council which he serves. His salary ($6,250 a year) is little more than half that of the Chief Clerk, the architect, the engineer and the valuer. The title has doubtless been got for him by some friend at Court by way of compensation for the inadequacy of his emolument. The only other new knight of any note in the medical world is Dr. William Japp Sinclair, Professor of Obstetrics and Gynecology in the University of Manchester. His title is probably a recognition, not so much of his scientific merits, which are not such as to make it inevitable that the King should delight to honor him, as of the part which he has taken in

promoting the higher education and registration of midwives.

The Queen of Portugal is here and her presence has naturally brought to life again the old fable that she is a doctor of medicine. This was officially denied some fifteen years ago in the *British Medical Journal* by the Portuguese Minister to the Court of St. James, who stated that although Her Majesty had always taken a great interest in medical matters she had never gone through a formal course of study. The legend is, however, too useful for journalists willingly to let it die, and it will doubtless be kept for use whenever circumstances make its revival appropriate.

So many official and "officious" statements have lately been made as to the King's health that persons of suspicious temper might almost be tempted to think that those about His Majesty protest too much. We are assured in inspired articles that he is in the most vigorous health, and that he owes this to his scrupulous care in the matter of drink and diet. It is likely enough that since his appendicitis scared him he has been more moderate, but the officers of his Life Guards have not forgotten the Gargantuan trencher feats which their royal guest performed for their edification whenever he condescended to dine with them. These occasions were known among them by the significant name of "gobble nights." It is recorded that Louis XIV. once complained that he had almost had to wait (J'ai failli attendre!). It was distinctly understood that Edward VII. must not be kept waiting at table. His plate, therefore, was never allowed to stand empty before him, even for a moment, and his glass had to be constantly refilled. Mere men of mold could not keep pace with him. He once assured a distinguished physician, who was called in rather behind the backs of the regular attendants, that he did not drink much—not, at any rate, like his brother, the Duke of Saxe-Coburg. That may well have been, for the Duke, when at sea had sometimes to be kept out of the way of visitors. Our temperate sovereign, however, has been known to drink seven different kinds of wine at one repast, to say nothing of liqueurs, chasse-cafes and whisky afterward. If it be true, therefore, as now stated that "of wines he partakes most sparingly," one can only infer that he has made the discovery that there are limits even to the tolerance of a royal stomach.

Rumors have found their way into certain newspapers that the Prince of Wales is suffering from consumption, and that this fact supplies the explanation of his sea voyages. The statement has, of course, been met with the usual official contradiction. People remember, however, that in 1902 a statement made in *Reynolds' Newspaper* to the effect that the King was seriously ill, and contradicted in the same way, was verified almost immediately by the postponement of the coronation ceremony and the operation for appendicitis. It may or may not be significant that the statements about the Prince of Wales have been published in the same paper. The members of our royal family are nearly all unwholesome looking. Bismarck opposed the marriage of the late Empress Frederick with the Crown Prince of Prussia on the ground that she came of a stock which he coarsely but not untruly characterized as "those scrofulous Guelphs." To those familiar with the appearance of the Prince of Wales there is nothing improbable in the suggestion that he is tuberculous.

A conference was held in London on November 16 to consider a proposal to introduce into England the methods of physical training taught at the Royal Central Institute of Sweden. There students go through a course of instruction extending over three years in the theory and practice of massage. The promoters of the scheme hold that massage has been misused and misunderstood in this country, and that it is necessary to place it on the same footing as, for instance, pharmacy. At the conference Miss Theodora Johnson, principal of a Swedish Institute at Bristol, advocated the adoption of a scheme of national physical training similar to that which exists in Sweden. In order that the poor might learn the elementary rules relating to the care of the body she urged the appointment of a large number of itinerant lecturers who should go about preaching the gospel of health. Lord Londonderry, President of the Board of Education, who was present, said the report of the Committee on Physical Degeneration showed how necessary it was that physical education should be brought within the reach of every child in the country. He promised that the report should receive the most careful consideration from the department of which he is the head. While declining to give any pledge in the name of the Government, he said the proposal to establish a great central organization for the promotion of physical education must commend itself to all. He added, however, that the details of the scheme were so varied that it was impossible for him to express approval without fuller examination. The scheme received the support of Sir William Broadbent, Sir Lauder Brunton and Sir William Church, President of the Royal College of Physicians of London. The last-named moved a resolution that steps should be taken to establish in the United Kingdom a national system of physical education, and that the conference should form itself into an association for the purpose of pressing proposals to that effect on the Government. The motion was seconded by Sir Lauder Brunton and carried "unanimously." So say the newspapers. The fact is, however, that only four persons out of a meeting of fifty, or thereabouts, were allowed to vote. Their unanimity, therefore, is not so wonderful as it might seem. The Bishop of Bristol, who presided at the conference, stated at the outset that only persons who had been invited would be allowed to vote. In plain English, the meeting was packed. Why this curious precaution was adopted I cannot say, but it looks as if the promoters were afraid of opposition.

As Sir Lauder Brunton is the Secretary of the National League for Physical Education and Improvement, it is not improbable that both the College and the League are in reality parts of one movement. According to him the first aim of the League is to coordinate all existing societies of kindred aim, including temperance associations, societies for the teaching of cooking, housekeeping and the feeding of children, athletic clubs, drill associations, cadet corps, boys' brigades, rifle clubs, volunteer corps and girls' clubs. The League further proposes to promote the establishment of gymnasiums and swimming baths for young people among the working classes who cannot afford to join tennis, cricket and football clubs. Special attention will be given to the physical training of women and girls. Brunton points out that the working women in towns very often marry at too early an age with no knowledge

how children should be fed. Often they go out to work to supplement their husbands' scanty earnings, and when the baby comes they are too weak or too busy to give it proper attention. The mortality of children under one year is appalling. Even among children under five years it is far in excess of what it ought to be. Of those who survive many grow up weakly, with constitutions permanently damaged. They go to school insufficiently fed. Their opportunities for play and physical development are far too few. All this is to be reformed. In a word, the aim of the League is the physical regeneration of the nation. It is hoped that when thoroughly organized it will be able to work through branches. Each branch should furnish instruction to the people on the laws of health generally. Girls, says Lauder Brunton, should be taught methods of cooking and housekeeping, and mothers instructed in the care of children. Physical exercises and opportunity for open-air games should be given to both boys and girls. In towns the mayors and corporations should be induced to take part in the organization. There should also be a committee of ladies to supervise the instruction of mothers and the care of children. Part of the work of the League will be to initiate changes in existing laws with a view to the promotion of physical efficiency.

In connection with the subject of the deterioration of the race it may be mentioned that at a meeting held on October 20, the Senate of the University of London accepted an offer from Mr. Francis Galton, F.R.S., to endow a Fellowship in the University for the promotion of the study of "National Eugenics," which he defined as "the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally." The person appointed to the Fellowship will be required to devote the whole of his time to the study of the subject, and in particular to carry out investigations into the history of classes and families, and to deliver lectures and publish memoirs on the subject of his investigations. The endowment is sufficient to provide not only for the Fellowship, but also for the salary of an assistant, and for the general expenses of the contemplated work, which it is intended to locate in one of the colleges or other institutions connected with the University. Mr. Galton, who is nearly ninety years of age, is a cousin of Charles Darwin. He is a past president of the Anthropological Institute and is well known to those who pursue, what the poet calls, the proper study of mankind, as the author of works on hereditary genius, Englishmen of science, their nature and nurture, natural inheritance, identification of individuals by fingerprints, and numerous other writings.

Herbert William Allingham, one of the busiest surgeons of the day, has found the strenuous life too much for him, and took his quietus a week or two ago at Marseilles, not with a bare bodkin, but with a hypodermic needle. He was only forty-two years old, and was successful beyond the dreams of the average British surgeon, holding appointments at court and being recognized as one of the best operators of the day. His speciality was the rectum, a field of surgical enterprise which was cultivated to good purpose by his father, who is still alive in retirement. The elder Allingham was once moved by the ambition to fill a seat in the Council of the College of Surgeons, which is looked upon here as the Sanhedrim of Surgical Israel. When the result of the poll was declared his coachman was heard to ask another Jehu waiting at the gate of the College where his master stood on the list. "At the bottom," was the reply. "Ah," said the coachman meditatively, "that's where he always is!" Young Allingham had a great charm of manner, and was accordingly very popular in society. He could talk about anything. But on one point, says an admiring scribe in one of our most icteric newspapers, he was adamant. "In ordinary society, though half a dozen persons present might be his patients, he was dumb about his work, and even his polished courtesy would give way before persistent questioning about professional matters." Surely there could be no more maladroit compliment to a surgeon than that he did not choose diseases of the rectum as a subject of conversation in mixed society. He might as well be praised for not having entertained the company by giving demonstrations on the half-dozen patients present. Allingham is succeeded in the post of surgeons to the royal household by Mr. Anthony Bowlby, of St. Bartholomew's Hospital, a surgeon who has proved his fitness for attending on royal personages by operating on the Princess Victoria of Schleswig-Holstein for appendicitis.

Another medical notable who has recently passed away is Dr. Charles Douglas Fergusson Phillips, author of a work on materia medica and therapeutics, which once had a considerable vogue. He was for some time lecturer on these subjects at Westminster Hospital, and examiner in the Universities of Aberdeen, Edinburgh and Glasgow. He was, I believe, originally a homeopath, but found professional salvation. Perhaps the greatest achievement of his life was the extraction of $80,000 from a railway company some years ago as damages for an injury which caused only temporary disablement.

AUENBRUGGER OR AVENBRUGGER?

To the Editor of the Medical News:

Dear Sir:—The name of Auenbrugger appears in literature spelled "Au," and sometimes "Av," these variations occurring in such authoritative writings as the following:

"Dictionnaire Historique de la Médecine Ancienne et moderne, 1828. Auenbrugger (Leopold) Né à Graetz dans la Styrie le 19 Novembre 1722.

Dictionnaire Encyclopédique des Sciences Médicales. "Auenbrugger (Leopold)—Dans le commencement de l'Anné 1761 paraissait à Vienne en Austriche une brochure etc., etc. Dans sa préface, dateé du 31 Décembre 1760 l'auteurs exprimait ainsi.

Encyclopedia Britannica 1875. "Avenbrugger or Auenbrugger, Leopold, a physician of Vienna. . . . He was born in Grätz in 1722 and died 1809."

In gathering material for the historic portion of an article on cardiac disease I fell into the error first made by Corvisart, who is probably responsible for this confusion, of spelling the name "Av." In conversation with Dr. Dock, of Ann Arbor, he called my attention to this error and I took the first opportunity of consulting an original copy of the "Inventum Novum," in the Surgeons-General Library at Washington, as I had not been able to procure one in the Library of the New York Academy of Medicine.

The following is an exact copy of the title page of an edition dated 1761, the year of the first publication:

LEOPOLDI AUENBRUGGER
MEDICINÆ DOCTORIS
IN CÆSAREO REGIO NOSOCOMIO NATIONUM HISPANICO MEDICI ORDINARII
INVENTUM NOVUM
EX
PERCUSSIONE THORACIS HUMANI
UT SIGNO
ABSTRUSOS INTERNI
PECTORIS MORBOS
DETEGENDI

(Printers Mark)
LABORE ET FAVORE

VINDOBONÆ,
TYPIS JOANNIS THOMÆ TRATTNER, CÆS. REG. MAJEST. AVLÆ TYPOGRAPHI.
MDCCLXI

In books printed as late as the seventeenth century two "V's" were used for "w" there being no such letter in the older fonts. The letters were sometimes crossed thus W. "U" and "V" were also interchangeable, as appears in lexicons published as late as 1840. It is not surprising then that Corvisart, in translating Auenbrugger's "Inventum Novum," should have introduced the spelling "Av" as shown by the following copy from a first edition:

NOUVELLE MÉTHODE
POUR RECONNAITRE
LES MALADIES INTERNES
DE LA POITRINE
PAR LA PERCUSSION DE CETTE CAVITÉ
PAR AVENBRUGGER

Medecin ordinaire de la Nation Espagnole dans l'Hopital impérial, a Vienne en Autriche
OUVRAGE TRADUIT DU LATIN ET COMMENTÉ PAR J. N. CORVISART
(*Titles*)
Insonvêre cavæ.....
Virg. Æneid
A PARIS
DE L'IMPRIMERIE DE MIGNERET
1808

The spelling Auenbrugger should be retained as this identifies the great discoverer with Germany (born at Grätz) which would not be the case with the spelling "Av." Very truly,

C. N. B. CAMAC.

108 East Sixty-fifth Street.
NEW YORK, November 21, 1904.

Treatment of Tuberculous Laryngitis.—To relieve the dysphagia in this condition the following tablet may be advised:

℞ Anæsthesin. 3i (4.0)
Pulv. altheæ. 3i (4.0)
Pulv. acaciæ. .....
Pulv. glycyrrhizæ. ..... aa q.s.
Fiat tabulæ No. L.
Hold in mouth until dissolved.

SOCIETY PROCEEDINGS.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.[1]

Eighth Regular Meeting, held October 19, 1904.

The President, S. J. Meltzer, M.D., in the Chair.

Members Present.—Burton-Opitz, Calkins, Davenport,[2] Ewing, Flexner, Gies, Hiss, Lee, Levene, Levin, Lusk, Mandel, Meltzer, Park, Richards, Salant, Wadsworth, Wallace, Yaku.

Members Elected.—J. G. Adami, R. A. Hatcher, Yandell Henderson, G. N. Stewart, C. G. L. Wolf.

ABSTRACTS OF REPORTS OF ORIGINAL INVESTIGATIONS.[3]

The Accommodation of the Eye, with Demonstrations.—By professor Theodor Beer, of the Univer- of Vienna. Two principles are realized in the accommodation of an eye, that is constructed as a "camera obscura:" (1) Change of curvature of refracting surfaces, principally the lens; (2) Change of distance between refracting mediums and image screen, principally distance between lens and retine.

1 There is only *increase* of curvature, principally of the anterior surface of the lens, during active accommodation. We observe it in mammals, birds and reptiles (lizards, crocodiles, turtles, very few snakes). Experiments were made before the society to show the increase of curvature of the lens in the eye of the water turtle—proofs of Helmholz's theory of accommodation.

.2 Accommodation by change of the distance between lens and retina is possible in two directions: (*a*) In cephalopods and fishes, which are normally short-sighted—accommodation for objects at a distance is effected by a movement of the lens toward the retina. In the eye of the fish there is a muscle, *Musculus retractor lentis* Beer, which draws the lens toward the retina. (*b*) In *Amphibia* and most of the snakes, the lens is moved toward the cornea, away from the retina, by changes of the intra-ocular pressure.

Preliminary Communication on the Composition of the Liver After Subcutaneous Injections of Liver Extracts.—By P. A. Levene and L. B. Stookey. About two years ago the authors observed that it was possible to increase the resistance of rabbit blood against trypsin by treating the animal to subcutaneous injections of pancreatic extract. It seemed probable that the resistance of organs against other proteolytic enzymes than trypsin could be increased in an analogous manner. Rabbits were treated with saline liver extracts. The autolytic powers of the livers of such animals were compared with the autolytic powers of the livers of normal animals. It was found that the autolytic power of the organs was not diminished. It was also noted that the organs of the treated animals contained smaller proportions of nitrogen than the livers of the control animals and further, that the proportion of non-coagulable proteids, and that of non-basic nitrogen was higher than in controls. In order to accurately interpret the findings, the composition of the organs was compared. (See the appended table). It was noted that the amount of water and carbohydrates was not affected by the treatment, while the proportion of ethereal extract was higher in the organs of treated animals than in those of the control animals.

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1 Proceedings reported by the Secretary, William J. Gies, Ph.D., of New York.
2 Non-resident.
3 The authors of the reports have furnished the abstracts. The secretary has made only a few abbreviations and minor alterations in them.

The Transformation of Negatively Heliotropic Animals (Gammarus pulex) into Positively Heliotropic Animals by Chemical Means.—By Jacques Loeb (presented by Simon Flexner). After it had been proved that the heliotropism of animals and plants is identical, it seemed desirable to find means by which positively heliotropic animals could be transformed into negatively heliotropic ones and *vice versa*. Groom and Loeb found that such transformation was possible in the nauplii of *Balanus perforatus* at Naples by the influence of light, inasmuch as these animals were positively heliotropic in very weak light and negatively heliotropic in strong light.[1] Later Loeb found that the marine copepods and young larvæ of *Polygordius* became positively heliotropic by the lowering of the temperature as well as by an increase in the concentration of the sea water, while they became negatively heliotropic under the opposite influences.[2] Moreover, Loeb observed that negatively heliotropic copepods can be made positively heliotropic by mechanical agitation,[3] and Miss Towle showed that the sign of heliotropism in *Cypridopsis* can be reversed through contact with solid bodies.[3] Holmes made the discovery that the positively heliotropic terrestrial amphypod, *e.g., Orchestia agilis* become negatively heliotropic when thrown into water.[4] of the fatty series; (2) many acids, except very weak ones, like boric acid; (3) certain salts, like ammonium salts.

Alkalies like NaOH, or Ba $(OH)_2$ and the neutral salts like NaCl or $CaCl_2$ bring about a scattering of the negatively heliotropic animals but do not make these animals instantly and without exception positively heliotropic, as do the anesthetics or the acids.

A few quantitative data may be mentioned here by way of illustration:

Ethyl acetate and similar esters instantly make all the *Gammarus* positively heliotropic in a concentration of about $^{m}/_{60}$. Ether requires a higher concentration, namely $^{m}/_{0}$. Ethyl alcohol brings about an equally rapid transformation of the negative heliotropic animals into positively heliotropic in a much higher concentration, namely $^{6}/_{2}$m. solution. Paraldehyd requires a concentration of about $^{m}/_{10}$. As far as the acids are concerned hydrochloric, oxalic and acetic acids make the animals instantly and without exception positively heliotropic in the concentration of about $^{m}/_{500}$. In boric acid the animals remain negative even at as high a concentration as $^{m}/_{10}$. NH_4Cl instantly makes the negatively heliotropic *Gammarus* positively heliotropic in a concentration of $^{m}/_{25}$. NH_4OH acts similarly in the

No. of Experiment.	Weight of rabbit gms.	Weight of liver gms.	Gram Ethereal extract per gms. of liver.	Gram Carbohydrate as sugar per grm. of liver.	Per cent. of water in liver.	$\frac{n}{10}$ As NH_4OH per grm. of liver c.c.	Liver before digestion. Per cent. total N as c.c. $\frac{n}{10}$ NH_4OH		Period of digestion Hours.	Liver after digestion. Per cent. total N as c.c. $\frac{n}{10}$ NH_4OH		Rabbit.
							Zinc sulfate filtrate.	Phosphotungstic filtrate.		Zinc sulfate filtrate	Phosphotungstic filtrate.	
I	....	..	.....	.....	....	20.0	13.5	9.9	24	18.0	12.3	normal.
II	....	..	.....	.....	....	18.0	10.0	8.5	24	24.0	19.5	"
III	....	..	.....	.....	....	19.0	10.1	8.7	24	18.9	13.2	"
IV	....	..	.....	.....	....	19.0	12.6	10.4	24	18.9	15.4	"
V	2050	75	0.026	0.078	72.0	....	....	....	..	....	....	"
VI	2250	87	0.023	0.107	69.2	19.8	....	....	..	....	....	"
VII	....	..	.....	.....	....	16.0	19.5	16.8	24	28.5	22.5	treated.
VIII	1710	66	0.048	0.055	71.5	16.8	21.5	19.7	24	30.7	26.7	"
IX	2800	76	0.056	0.071	70.8	17.3	20.7	15.6	24	29.6	23.2	"

The author had tried in vain to change the sense of heliotropism in animals by chemical means, and this gap was felt the more keenly, inasmuch as he was led to believe that chemical changes might ultimately determine changes in the sense of heliotropism. Recently, however, the author succeeded in finding an instance where specific chemical substances are capable of transforming the sense of heliotropism in animals. The experiments were made with a fresh water gammarus (*Gammarus pulex*) which can be obtained at any time in large quantities at Berkeley. If one puts a large number of these animals suddenly into distilled water or into common tap water, they all become at first very negatively heliotropic. It is possible that this is caused by the mechanical agitation, connected with the transferring of the animals from one vessel to another, but this has not yet been ascertained with certainty. Half an hour or an hour later, the negative gathering of the animals becomes less dense, and the animals are scattered in the vessel.

These negatively heliotropic animals can be transformed instantly into positively heliotropic animals by the following substances: (1) Many of the anesthetics same concentration. As far as neutral salts are concerned they usually do not make the negatively heliotropic *Gammarus* positively heliotropic until the concentration is over $^{m}/_{4}$ or $^{m}/_{2}$ and even then, as a rule, no instantaneous and complete gathering of the animals at the positive side of the vessel can be produced, but only a slow and partial gathering.

As the concentration at which the transformation of negatively heliotropic *Gammarus* into a positively heliotropic animal is produced differs for different substances, and inasmuch as this transformation is brought about most promptly by such substances as diffuse most rapidly into the tissues, we must conclude that we are not dealing here with an osmotic but with a chemical effect

Trypanosomes and Bird Malaria.—By F. G. Novy and W. J. MacNeal. (Presented by Gary N. Calkins). The studies made before upon the malarial parasites of birds have shown the existence of four species or types. These are: *Proteosoma, Halteridium, Hæmamœba majoris*, Lav., *Hæmamœba Ziemanni*, Lav. In the course of an extended study of the parasites of birds, the authors have met with several new species and, since the number is likely to be still further increased, it seems desirable to attempt a classification. This the authors have tried to do basing it largely upon the type of mul-

1 Groom and Loeb. Biologisches Centralblatt, 1890, p. 160.
2 Loeb. Pflüger's Archiv, Bd. 54, p. 81, 1893.
3 Towle. Am. Journal of Physiology, vol. iii, p. 345, 1900.
4 Holmes. Am. Journal of Physiology, vol. 5, p. 211, 1901.

tiplication and the habitat of the parasite. Two genera will be given; one, *Plasmodium*, characterized by formation of segmenting forms in the peripheral blood and invasion of the fully developed red blood cells. The injection of these parasites results in an infection. For the other germs we use the priority name of Kruse, *Hæmoproteus*. This is characterized by an entire absence of segmentation forms in the peripheral blood, and, with the exception of two species which form a transition as it were between the two genera, invasion of young erythroblasts is the rule. The injection of the blood having these parasites does not lead to infection.

With this division the species are arranged as follows: A. *Plasmodium*, including parasites of man, some of birds and very probably some of cold-blooded animals. (1) *Plasmodium relictum*, syn. *Hæmamœba relicta, Proteosoma*. (2) *Plasmodium Vaughani*, n. sp. B. *Hæmoproteus* including chiefly parasites of birds and probably offering transitional forms to the *Hæmogregarines* of cold-blooded animals. (1) *Hæmoproteus Danilewskyi*, syn. *Halteridium*. (2) *Hæmoproteus Mac Callumi*, n. sp. (3) *Hæmoproteus Sacharovi*, n. sp. (4) *Hæmoproteus majoris*, Lav. (5) *Hæmoproteus Ziemanni*, Lav. (6) *Hæmoproteus Rouxii*, n. sp.

Plasmodium Vaughani, n. sp., is common in robins and resembles *Proteosoma* and may be easily mistaken for the latter. The hyaline body is smaller than that of *Proteosoma*, does not displace the nucleus, contains one large pigment granule and is readily recognizable by the presence of a large, bright, refractile, colorless globule. It segments and usually forms four cells. Canaries may be infected; apparently non-fatal.

Hæmoproteus MacCallumi, n. sp., found in mourning dove. Like *Halteridium*, which it resembles, it infects erythrocytes. Grows on one side and may completely surround the nucleus. The fully developed sexual forms fill and somewhat distend the blood cells. Microgamete formation observed. The infection cannot be transferred by blood injection.

Hæmoproteus Sacharovi, n. sp. This species, probably first observed by Sacharoff, who regarded it as a "leucocytozoon," is related to that of Danilewsky. Found in young mourning doves and elsewhere. Invasion begins with an infection of very young erythroblasts. As the parasite grows it pushes the nucleus to the periphery, where it is seen in the adult form on the outer edge as a cap, which is but a trifle larger than the nucleus of a red blood cell. The parasite is spherical, male and female forms common, latter predominate, blepharoplast distinct, adjoining or over the nucleus. Microgametes formation common. Infection not transferable by the blood.

Hæmoproteus majoris, Lav. This was found once by Laveran in a titmouse. This species is extremely common in robins and other birds. As with preceding invasion at early stage shows infection of very young erythroblasts, the small parasite lying next to the large round nucleus. As the parasite grows it pushes into the nucleus which becomes crescentric and may almost wholly surround the parasite. The adult sexual forms are large, about 10 to 12 microns in diameter, and are readily recognizable by the peripheral ring of the nucleus of the host cell. This cap may extend, and usually does, around two-thirds of the cell and even more. The blepharoplast is easily seen in female cells; microgamete formation common. No infection of other birds by injection of blood swarming with these forms.

Hæmotropeus Ziemanni, Lav., has been studied by Danilewsky, Ziemann, Laveran, Schaudinn and others. Forms long spindle-shaped bodies which are 30 to 50 microns in length. We have found this species or one closely related to it in the blood of a hawk. Sexual forms easily recognized.

Hæmoproteus Rouxii, n. sp., is very common in sparrows, and represents the very earliest possible infection of young erythroblasts, so much so that it is not feasible to exclude the possibility of their being leucocytes. As the parsite grows it pushes into the nucleus which assumes the form of a thick crescent. The parasite measures from 4 to 6 microns. Its plasma does not stain readily and sexual forms have not as yet been recognized. Apparently always associated with this cytozoon are minute crescentic free hemogregarines. These are but 4 microns long and are motile, crawling over the red blood cells in characteristic manner. Larger motile crescents, about 10 microns long, at times are present. Both large and small crescents are free and motile and, it is important to note, are present in the fresh blood at the moment when drawn. They cannot, therefore, be considered as oökinetes. They are hemogregarines and presumably constitute the extracellular stage of *H. Rouxii*.

It is to be noted that the last four mentioned forms all exert pressure in the nucleus of the erythroblasts, and, as a result, give rise to very peculiar types. They are all "leucocytozoa" of which, thus far, there has been but one type, that of *H. Ziemanni*. The view of Schaudinn that the latter is a trypanosome which ingests an entire erythroblast by attaching itself to such by one end becomes untenable, inasmuch as all stages of infection, from the earliest to the latest, can be readily observed in the case of *H. Sacharovi* and *H. majoris*. The authors regard the large spindle-shaped *H. Ziemanni* as an infection of an erythroblast and the elongated form as consequent upon an alteration of the wall of the host-cell leading to increased osmotic pressure which, acting on the poles, gives rise to the spindle-shaped forms.

In addition to the parasites mentioned, birds harbor very frequently *Filaria* and *Tryponosoma*. In the case of the *Filaria* while the peripheral blood may contain but a few, the heart blood may contain large numbers. Trypanosomatic infection of birds is far more common than has been supposed. The largest number of infected birds seen by any one observer was eight, which were found by Dutton and Told, in Senegambia. The reason why they have not been found more commonly is because they are present in very small numbers, usually not more than one or two flagellates in a drop of blood. By microscopical and cultural methods the authors have been able to detect trypanosomes in the blood of 33 birds. Of this number 18 were detected by direct blood examination (of the 18 birds, 10 were tested culturally and gave growths), and 15 by means of our cultivation method, that is to say, in 15 cases where the microscope failed to show trypanosomes, the culture method showed them to be present. This shows that, as in the case of the bacteria, the cultural method is a more delicate means of detection of small numbers of parasites than is the microscope. The occurrence of these trypanosomes, with reference to the cytozoa mentioned, is of special interest. Thus, 13 out of the 33 trypanosomes were unaccompanied by any intracellular parasites, while 20 were associated with one or more kinds of cytozoa. It was not an uncommon thing to find multiple infection, that is, the same blood harboring at one time, in addition to trypanosomes, two or three different species of intracellular parasites.

Again, in addition to the fact that trypanosomes may be present without any other parasite, the interesting fact that when thus associated there is no constant rela-

tion between the two. In other words, the same trypanosome may be found at one time with a *Protcosoma*, at another time with a *Halteridium*, or with *H. Sacharovi* or with *H. majoris*, etc.

In 25 out of the 33 cases mentioned cultures were obtained. Nearly all of these have been carried through a series of subcultures or new generations. Here another important fact was brought out. The cultural method is not only the best means of detecting trypanosomes in the blood, but it is the best means of differentiating them into species. A study of 25 cultures attained shows that they represent three, if not four and possibly more distinct species. The cultural characteristics are extremely well marked and offer an admirable means of differentiation. [The detailed account of these forms must be left to the full paper by the authors on this subject.]

One species, however, more common than any of the others must be considered at this point. Its cultures present an extremely interesting appearance and are unusually luxuriant. They show two types of cells. One of these is round or in short spindles which always occur in rosettes with the flagella directed centrally as in the case of *Trypanosoma Lewisi*. The other type is long and very slender, almost a mere line, and is extremely motile, traveling forward and backward with great rapidity. Very often two cells unite by their posterior ends; at times agglutinations are found and in these the whips are found situated on the outside of the mass. This long, slender, type corresponds exactly to the "*Spirochæte*," described by Schaudinn, while the other type agrees with his "*Trypanosoma*."

It is noteworthy that inoculation of the trypanosome cultures, even in large amounts into birds, failed to produce any cytozoa. In one case a canary infected with such a culture showed trypanosomes in its blood for three months without any sign of an intracellular parasite. These facts are of importance because of their bearing on the recent views of Schaudinn, regarding the relation of trypanosomes to the intracellular parasites. As is well known this distinguished protozoölogist believes that in the case of *Halteridium* the sexual forms unite in the stomach of the mosquito to form oökinetes which then develop into indifferent male and female trypanosomes. This type agglutinates with the flagella directed toward the center. In the case of the *H. Ziemanni* he holds that a similar change occurs in the mosquito, giving rise to long slender spirochætes, which agglutinate with the flagella directed outward. The injection of suspensions of such infected mosquitoes produced the characteristic infection with the hemocytoza.

It will be seen that the results obtained by the authors do not bear out Schaudinn's conclusion. The authors have shown that birds may harbor trypanosomes even for months without showing any intracellular parasites. On the other hand, birds rich in such cytozoa may contain no trypanosomes. Thus, cultures attempted from 26 of such heavily infected birds failed to show any growth. Again the presence of trypanosomes is not associated with any one form of intracellular parasite. Furthermore, the cultural method shows the existence of several distinct species of trypanosomes, and among these is one which presents at the same time both types described by Schaudinn as stages on the one hand for *Halteridium*, and on the other hand for the *Leucocytozoon* of Danilewsky.

The authors, therefore, conclude that trypanosomes in birds may be met with as several distinct species wholly unrelated to the intracellular parasites. The greatly diverging conclusions reached by Schaudinn and the authors must be ascribed to the fact that Schaudinn worked with "*mixed cultures*," as developed in the body of the mosquito, whereas the authors have employed strictly pure cultures of these flagellates.

[The authors hope to publish the full detail of this investigation in the January number of the *Journal of Infectious Diseases*.]

The Gradual Decrease in Bacteria of the Production of Agglutinable Substance.—By William H. Park. At the last meeting of the Society of American Pathologists and Bacteriologists, an informal statement of this fact was made by Dr. Welch, for Drs. Marshall and Knox. The experiments of Dr. Collins and the author are recorded because they were undertaken in a slightly different way and also because a certain number of confirmatory observations are of value. The maltose fermenting paradysentery bacillus of Flexner was grown for twenty-four hours on each of eleven consecutive days in fresh bouillon solutions of the serum from a horse immunized through oft-repeated injections of the bacillus. The serum strength in the solutions used was one and one-half, four and fifteen per cent. The serum agglutinated the culture before its growth in the solutions in dilutions up to 1:800, and was strongly bactericidal in animals. After eleven transfers the culture grown in the fifteen per cent. solution ceased to be distinctly agglutinated by the serum in any dilution, and ceased to absorb from the serum any appreciable amount of the agglutinins acting upon the original culture. The cultures grown in the one and one-half and four per cent. solutions were changed to a less degree and agglutinated in dilutions up to 1:100 and 1:60 respectively, and continued to absorb agglutinins. The recovery of the capacity to be agglutinated was very slow in the culture grown in the strongest serum solution, when it was from time to time transplanted on fresh nutrient agar. The other cultures recovered this characteristic more rapidly.

The first culture, after growth for sixteen weeks, during which it was transplanted 43 times, agglutinated in dilutions up to 1:200 and, after twenty weeks, in dilutions up to 1:400. The culture grown in four per cent. solution of serum agglutinated after sixteen weeks in dilutions up to 1:500, and the one and one-half per cent. agglutinated in dilutions up to 1:800. This diminution, and final, almost complete, lack of development of agglutinable substance in bacteria grown in a serum rich in agglutinin and immune bodies is interesting, both as showing a rapid variation in bacteria of essential characteristics, and as posibly indicating one means of adapting themselves to resist destruction in the living body, since the bacteria which ceased to produce agglutinable substance and probably, also less substance with affinity for other antibodies, might be considered less vulnerable to these substances.

It is not certain that the agglutinin in the serum causes the change in the bacteria, for solutions may agglutinate and still not produce this effect. The fact has been noted that the horse serum of animals not immunized has much the same effect on the cultures as the immune serum. Although this suggests that the change is not due to antibodies, it does not prove this, since the serum of a horse before injections is rich in antibodies, for the typhoid and colon groups, due possibly to the passage of bacteria from the intestines into the circulation.

The author's explanation of the process is that there are substances in the serum which attack certain parts of the bacteria, such as the agglutinable substance. In the increase of bacteria in the serum those which produce the least of these substances are least inhibited and

therefore develop most rapidly. When cultures are made from serum solution to serum solution daily, a gradual differentiation takes place until finally bacilli producing almost no agglutinable substance develop.

Some Mendelian Results in Animal Breeding.—By C. B. Davenport. The essence of Mendelism in inheritance is its alternative character. In this it is opposed to blending inheritance (as in human skin color) which had been regarded as the typical sort of inheritance. At the station for experimental evolution of the Carnegie Institution, certain new cases of non-blending inheritance have already been found. Among sheep it appears from Dr. Alexander Graham Bell's records, that the offspring of two black sheep are (probably always) black, although one or more of the grandparents were white. It looks as if black color (like albinism) might be recessive. Among canary birds it is found that of the offspring of crester and of plain-headed birds, some are crester and some are not. Poultry have been studied because of the numerous characters they exhibit. When a Japanese long-tailed, clean-legged cock was crossed on a white bantam hen, the two surviving offsprings were highly colored, like the father, and had abundant feathers on the legs like the mother. The crested characteristic of poultry is peculiar, being sometimes dominant and sometimes (apparently) blending with the combed condition when the cross is made.

On the Decomposition Products of Epinephrin.—By John J. Abel and R. de M. Tavean. (Presented by William J. Gies.) The empirical formula, $C_{16}H_{13}NO_3.\frac{1}{2}H_2O$, adopted by Abel for that member of the epinephrin series, which he has called epinephrin hydrate (the adrenalin of Takamine) is at present, the subject of an acute controversy. The authors are now engaged in a repetition of the analytical work on which Abel based the above formula for epinephrin hydrate. In view of the suggestion of Abderhalden and Bergell that this substance should be prepared in a way that avoids oxidation by the air, the authors have undertaken the laborious task of preparing and purifying it in an atmosphere of hydrogen.

The authors wish to remark here that the $\frac{1}{2}H_2O$ of their empirical formula has always been regarded by them to be water of constitution, and not water of crystallization, as their opponents have taken for granted. The assumption that this $\frac{1}{2}H_2O$, so easily removable by high heat and by various acids, is water of constitution necessitates doubling the present empirical formula, a procedure which is at variance with the molecular weight determinations of v. Fürth and Jowett. These determinations are, however, open to serious objections as will be shown at length elsewhere. Work on the decomposition products of both alkaloidal epinephrin and epinephrin hydrate has been continued. The basic substance, $C_8H_4N_2O$, which is obtainable equally from both forms of epinephrin, has been decomposed by treatment with caustic potash into ammonia, (NH_3) methylamine ($CH_3.NH_2$) and methylhydrazine ($HC_3.NH.NH_2$) of these decomposition products methylamine is also obtained from both modifications of epinephrin. Methylhydrazine has thus far not been obtained either from epinephrin or its hydrate. This degradation product is of great importance in throwing light on the chemical constitution of the new base, $C_8H_4N_2O$,as its appearance, under the circumstances described, proves that the two nitrogen atoms of this base are directly combined one with the other, and suggests among other things for this base a ring structure such as is found in bodies of the pyrazolon $\left(\begin{matrix} N\text{———}NH \\ \| \quad\quad | \\ CH{=}CH_2\text{—}CO \end{matrix}\right)$ series. It may here be noted that pyrazolin carboxylic acids can easily be made to yield hydrazine.

A full discussion of the bearing of the above results on the constitution of epinephrin must be deferred until it has been determined whether the oxidation product, $C_8H_4N_2O$, is of a primary or of a secondary character. In any case an adequate constitutional formula for epinephrin must be able to account for all the decomposition products that have been named. In conclusion it may be mentioned that the authors have repeatedly obtained, in their recent work, small quantities of skatol $\left(C_6H_4{<}\begin{matrix} C(CH_3) \\ NH \end{matrix}{>}CH\right)$ on fusing epinephrin hydrate with caustic alkalis—a product which has been erroneously supposed to be obtainable only from the monobenzoyl series of epinephrin compounds.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held November 7, 1904.

Cirrhosis of the Liver.—The condition was briefly discussed by Dr. Osler preliminary to a report of a case representing one of the rare forms. The subject was, he said, much confused in the literature, particularly in France, where a multiplicity of forms had been described, and a most complex classification constructed. Between these text-book forms and the actual clinical findings there was not always agreement, and the result has been a good deal of confusion, particularly on the part of students. Cirrhosis was best considered as divided into three types: The portal type, in which the involvement is chiefly in the peri- and sublobular veins—the biliary type, and the capsular type—the capsule being involved alone or as part of a general peritonitis.

Biliary Cirrhosis of Family Type.—There was not, Dr. Osler said, general agreement as to the existence of a definite biliary type of cirrhosis, the English particularly denying it. He expressed his own belief, however, in such a clinical entity exhibiting the following characteristic features: A protracted course (after five to twelve years), a persistent, chronic, intense jaundice; pains, often marked, in the hepatic region; tendency to occur in the young (sometimes in children) as distinct from alcoholic cirrhosis; absence of signs of portal obstructions (ascites, hemorrhoids, etc.); frequency of hemorrhages (mucous and cutaneous); a large, smooth liver found on examination. Other causes of this form of enlargement of the liver should, however, be always kept in mind, for hypertrophy of this type is seen in the alcoholic liver, in the fatty liver and in cases of regeneration after atrophic cirrhosis.

Report of a Case of Hanot's Cirrhosis.—The case reported was of a young man of twenty-three years, with good family and personal history, and without alcoholic or luetic taint. At five years of age he had had an attack of jaundice, from which he recovered. Five years before admission the persisting jaundice had first appeared, and it had been constantly present ever since. With it there had been itching and epistaxis, but no pains, anemia or fever. The liver was below the costal margin, the spleen was not felt, and there was no leucocytosis. Under the administration of calcium the blood coagulation-line was reduced to about two minutes, and an exploratory operation was done. No obstruction was found in the bile passages. The patient died in a few days of hemorrhages. It was found later that the condition was familiar, two of

the patient's brothers and one sister suffering from persistent jaundice. Dr. Osler, in connection with this case, reviewed the clinical features of two other patients treated some years ago in the Johns Hopkins Hospital for the same condition. These were two brothers, aged thirty-two and thirty-four years, with a healthy family and no alcoholic history. Both had been jaundiced several years, and suffered from recurring hepatic pains with hemorrhages from nose and gums. The liver was enlarged in both cases. One of the patients died with signs of a terminal infection, and staphylococci and streptococci were found in the blood.

Pathological Specimens of Biliary Cirrhosis.—Dr. MacCallum showed the specimens and described the pathological changes found at autopsy in the first case reported by Dr. Osler. The gall-ducts were apparently normal. The liver was dark-green and soft, and there were, macroscopically, no fibrous strands seen in it. It showed no signs of gross stagnation of bile. Microscopically there were seen in the central portions of the lobules disintegration, phagocytosis of bile, infiltration with leucocytes, but no inflammation of the ducts. The cause of the jaundice in these cases was discussed and Eppinger's theory of a biliary thrombosis with rupture of the bile capillaries and extravasation of bile into the blood was said to be the most likely one. Dr. Osler referred to the presence of bile in the stools of these patients in spite of the intense jaundice which might be more marked than in any condition except malignant disease.

Crossed Dissociated Sensory Paralysis.—Dr. Thomas exhibited a case showing this dissociated paralysis with a lesion in the medulla. The patient was a man, aged forty-eight years, of good family and personal history, who, from September, 1904, on had been suffering with attacks of vertigo every ten or twelve days. The attacks lasted fifteen to twenty minutes, and were accompanied by pain in the left side of nose and face, numbness in the side and a sense of "everything going round." Between attacks he was well. On October 2 he had an attack similar to the others, but more severe; and from this he never recovered. His voice became hoarse, a disagreeable feeling became almost constant in the left side of the face, there was numbness of the left side and continuous vertigo. On occasions there was perspiring of the right side of the face. There was no nystagmus. The seventh and eighth cranial nerves were normal, and there was no change in the mouth. Throughout the distribution of the fifth cranial nerve on the left side there were analyesia and thermanesthesia. The pharyngeal reflex was absent, there was paralysis of the left side of the larynx, the palate fell slightly to the left, and the tongue was protruded slightly to the right. Sensory changes in the right arm were the same as those on the left side of the face. The muscular strength was good, but the left hand and leg were unsteady. The deep reflexes were normal on both sides. On the right side the abdominal reflex was active; on the left it was absent. There was unilateral ataxia of the left foot. The patient had been in the hospital two weeks, and was much improved. The diagnosis was of a lesion in the medulla with disturbance of the sensory fibers passing to the cerebellum in the region of the restiform body. The lesion must have been above the decussation of the fibers of the fifth nerve, and below the decussation of the sensory nerves of the body. These data, together with the involvement of the tenth nerve and the escape of the seventh and twelfth located the lesion exactly. The important features of a similar case in the Johns Hopkins Hospital some years ago, were described by Dr. Thomas. This patient presented a symptom-complex much like, though not identical with, the one reported. He died suddenly, and at autopsy there was found a thrombus of the right vertebral with the posterior, inferior, cerebellar artery. Several similar cases have been described in the literature. In Wallenberg's patient (reported in *Deutsche Zeitschrift für Nervenheilkunde*) diagnosis of thrombosis of posterior-inferior cerebellar artery was made during life, and this condition was found at autopsy. In Monakow's case, however, the same diagnosis was made from a similar symptom-complex; but at autopsy an aneurism of the vertebral artery was found causing pressure destruction of the cerebellum. The prognosis in such conditions is good, for partial recovery, but certain features usually persist.

Situs Transversus and Atresia of the Pylorus.—This condition was briefly reviewed by Dr. Little in connection with a case reported. The monster had been born of a mother aged thirty-three years, who had been admitted to the hospital during the seventh month of her pregnancy. The child when born weighed 2,350 grams. Hydramnios complicated the delivery. The child's head was about normal, but it had the typical "old-man" appearance. Shortly after birth it vomited 1½ pints of amniotic fluid, and the following day passed some meconium. Feeding was attempted with modified milk, but vomiting occurred approximately after every second feeding. On the fifth day mother's milk was given, and subsequent gastric lavage showed that the food had not passed out of the stomach. There was bile in the stools. Operation was decided on, and a posterior gastro-enterostomy done. The patient died next morning. At autopsy complete situs transversus was found, the right lung had but one lobe, there was no connection at all between stomach and duodenum, and the latter began in a pouch containing the ampulla of Vater. The etiology of this condition (atresia of the pylorus) is not clear. Error in development, volvulus, and local fetal, luetic peritonitis have been suggested as the cause. Ahlfeld thought it was due to the persistence of the omphalomesenteric duct, while Küttner believed in an arteritis and thrombosis of the intestinal arteries as the origin of the deformity. A congenital malformation of the vessels was found in this case—the gastric and splenic arteries anastomosing and short-circuiting the pancreatico-duodenal branches of the hepatic.

MEDICAL AND CHIRURGICAL SOCIETY OF MARYLAND.

Stated Meeting, held November 4, 1904.

Section on Clinical Medicine and Surgery.

A Case of Traumatic Asphyxia.—Dr. Randolph Winslow reported a case of traumatic asphyxia. This condition was recently reviewed by Beach and Cobb in the Annals of Surgery, and at that time only seven cases (including that of the author's) had been reported. The accident always results from the application of a compressing force, kept up for some time and sufficient to prevent breathing. The essential feature is the remarkable blue discoloration of face and neck. In some cases the extremities have been

involved. The patient reported was a man, aged twenty-two years, who had been caught between the top of an elevator and the roof of the shaft. He had been kept in this position by the ascending elevator for some moments, the force, which doubled his body up like a jack-knife, being sufficient to produce a laceration around the rectum from the heel of the shoe. The patient did not lose consciousness, but suffered great agony, and felt "as if he would burst." His pulse, when he was first seen, was 120, respiration 40, temperature normal. There was bloody expectoration and epistaxis; and the fourth, fifth and sixth ribs on the left side were fractured. Subcutaneous emphysema was present; but there was no blood in the urine, which had to be drawn with a catheter. The pupils were equal, and reacted to light, there was conjunctival ecchymosis. Sight and hearing were good. The most remarkable feature in the examination was the discoloration. The head, face and neck to the level of the collar were dark blue, the charge being a punctiform one, like the scarlatina rash. Pressure caused no disappearance of the "cyanosis." The patient was shocked, and was practically untreated, except for absolute rest and the usual attention to his other injuries. On the day after admission his temperature rose to 100.8° F., but with this exception, convalescence was uneventful. He was out of bed on the eighth day, and four days later left the hospital, though the discoloration had not then entirely left.

Pathology of the Condition.—Dr. Winslow said that this condition was not infrequently seen in patients dead from compression, but it was extremely rare in the living. Previous to the work of Beach and Cobb it had been thought to be a cutaneous hemorrhage; but these authors showed, by histological examination, that no extravasation occurred, the essential charge being a dilation of the capillaries. This observation was confirmed by Dr. Winslow. A piece of excised skin having been examined after hardening in Zenker's fluid and staining with hemotoxolyn and eosin and with Van Gieson's stain. Distention of the capillaries, absence of extravasation of blood and a practically normal skin were found.

The Treatment of the Stump of the Appendix.—This subject was discussed by Dr. H. A. Kelly. The development of appendicitis in the history of surgery had, he said, been associated with the operative treatment of appendicitis. Nowhere else in surgery was more clearly shown how much may be accomplished in a small field by careful work. The development of the operation was as good an example as could be had of the evolution of operative technic, several workers each adding a small improvement until the procedure had become satisfactory to all. After the recognition of appendicitis as a clinical entity seventy-five years had occurred before it was intelligently treated by the surgeon. There were two reasons for this. One was the invention of the name "typhlitis," which had resulted in a false idea of the pathology of the condition, and the other was the authority of Dupuytren, who opposed advance in this direction. Clear light first began to dawn when Reginald Fitz published his classical paper; and the subject was soon cleared up by the work of Morton, Sands, Parker, McBurney, Bull, Weir, Deaver and Senn. Krönlein in 1844 was the first to remove an appendix. He opened a pericecal abscess, ligated and amputated the appendix, and closed without drainage. The patient died. Hall, at the Roosevelt Hospital in 1886, ligated and amputated an appendix and drained the abdomen successfully; but Morton in 1887 was the first to operate on a case of appendicitis, in which a definite diagnosis had been previously made. Ligation and amputation with evisceration of the abscess and drainage resulted in recovery. In 1889 Treves first sutured the peritoneum, and Senn, in the same year, first covered the stump with peritoneum. The cuff operation was first described by Fowler, and Dawbarn was the first to advise stretching of the lumen and invagination of the organ into the cecum. Other methods which had been described were: Edebohls's (invagination of the whole appendix which is left to slough into the cecum), Deaver's (amputation in the cecum), and the method of Halsted and Finney (application of three clamps, withdrawal of middle clamp and amputation at that point). The danger in any method was said to be that of contamination of the surrounding peritoneum, and if this risk could be eliminated an ideal procedure would result. Donnes's electrothermic cautery would accomplish this purpose, but the great objection to its use was the necessity for expensive and elaborate electrical apparatus.

Exhibition of a New Instrument for Dealing with the Appendix Stump.—A new instrument was shown and its application in the treatment of the stump of the appendix demonstrated by operations on pathological material. The base of the appendix was caught between the blades of a powerful crushing forceps, which were provided with beveled edges so arranged that the point of an actual cautery could rest on them and convert them into cooking irons. The appendix was then amputated by the cautery, and its stump thoroughly cauterized. The blades of the crushing forceps were then heated slowly by the cautery, the tissues which had been crushed between them being in this way thoroughly cooked and sterilized. When the forceps was removed a thin, transparent, flat area was seen representing the stump of the appendix, which had been thoroughly crushed, completely sterilized and absolutely sealed. A seroserous suture was then placed in the ordinary way.

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held October 8, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

SYMPOSIUM ON CHRONIC BRIGHT'S DISEASE.

The Etiology and Diagnosis.—This part of the subject was discussed by Dr. Samuel Wolfe, who stated that one usually has as an underlying cause, either inflammation or degeneration, probably both, and that it was a mooted question as to whether there was ever degeneration without inflammation. He referred to the fact that in many cases back of the inflammation and degeneration there was a toxin or specific infection, and cited among the causative factors, malaria, tuberculosis, amyloid degeneration, syphilis, exposure, excessive use of alcohol, particularly beer. The disease is more frequent in males than in females and generally occurs in early life, before the fortieth year. He confined his remarks to the chronic parenchymatous variety, and stated that the condition occasionally was associated with a slight form of pyemia, especially after pregnancy, or with anemia. The urine is scanty with a specific

gravity normal or slightly higher; a low specific gravity being indicative of the interstitial variety. The histological elements are more scanty in the chronic interstitial variety, and the edema is more marked. He referred to the diagnostic value of accentuation of the aortic sound, which, while not indicative of any specific form of Bright's disease, was very suggestive of renal trouble. Careful chemical and microscopical study of the urine; the condition of the heart; and the slowly progressive blood deterioration must remain the cardinal points in the diagnosis.

Prognosis and Treatment of Chronic Nephritis.—This was read by Dr. A. C. Morgan, in which he stated that, as it was impossible to repair the damage done to the kidney, the treatment must necessarily be of an inhibitory character. The prognosis, he stated, was difficult to determine owing to the uncertain time the disease has existed, and the complications which may arise, the younger the patient the more serious is the prognosis, the variety in such cases being usually the parenchymatous. He referred to the fact that death was not always caused by the disease alone, and cited as chief among the terminal complications, pneumonias, particularly bronchopneumonia, grippe, cerebral hemorrhage, cardiac dilatation, and inflammation of the serous membranes, pericarditis being the gravest of the latter condition. In uremia, accompanied by convulsions, he stated, the prognosis was grave. In the treatment, especial attention should be directed to the removal of the cause, and much can be accomplished by the treatment of the patient as well as the disease. Careful attention should be given to the general condition and hygiene, flannels should be worn the year round, in order to stimulate the activity of the skin, and, if possible, the winter passed in a warm, equable climate. Mental labor must be cut down and exposure avoided. Cold bathing should be avoided, and benefit is derived from massage, rest in bed for ten hours out of twenty-four, or the entire time when the paroxysms are severe; malt liquors and spirits should be avoided and carbonated waters used freely. Nitrogenous foods should be reduced and milk may form an important part in the dietary. The treatment should be directed to arresting the sclerotic or degenerative changes and overcoming the anemia, for the former of which may be used potassium iodide, hydriodic acid and mercuric chloride and for the latter, arsenic and iron. He then discussed, in detail, the treatment of high tension, low tension, effusions, drowsiness, dropsy, asthma, edema of the glottis, epistaxis, obstinate vomiting and diarrhea, pruritis, palpitation, and uremia, for the latter condition venesection being recommended. Chloroform, chloral and the bromides, and in the parenchymatous variety morphine in good doses may be used, but in the interstitial form should be used but sparingly, although the author cited a case in which for five years he had employed morphine hypodermically for the asthma which had resisted all other measures, followed by pilocarpine the morning following without any untoward results.

Dr. James Tyson, in the discussion, said that while it had been stated that the pathology of chronic nephritis was so indefinite that no treatment could be based on it, he felt that this was going too far. He stated that there was no known agent by which the restoration of the structure of the kidney could be accomplished, and that the treatment naturally divided itself into two parts: (1) The placing of the patient in a condition which is most favorable for nature to assert herself and favor change in the structure, if possible, and (2) the treatment of the symptoms. He referred to the former method of the enormous use of drugs to diminish the albuminuria, and stated that there was no remedy which would prevent the transudation of albumin when conditions favor it. He recommended rest in bed for a few hours in the middle of the day in the mild cases, and longer if the case was severe. He believed that the distinctions between white and red meats were unfounded, and recommended that, instead of prohibiting red meats, the moderate use of all meats and, except in the acute exacerbations, a moderate quantity may be allowed. Climatic treatment is of value and the winters, is possible, should be passed in a warm climate. The treatment of the symptoms should be directed to the diminution of arterial tension. In the severer forms, rest in bed is absolutely necessary; massage is also of value. He felt that the general practitioners frequently made a mistake in advising the too free use of water. Puncture under aseptic precautions was recommended in dropsical cases, and the danger from sepsis was expressed as practically nil. Venesection and intravenous injections of normal salt solution was recommended in cases of uremia. In regard to the iodide of potassium, he stated that if it can be used without producing unpleasant symptoms, it may be of value, but the bichloride of mercury he did not look upon as of any use.

Dr. Wendell Reber stated, that the ophthalmological changes were of two kinds, degenerative and hemorrhagic; the inflammatory changes being most likely to occur in the acute forms, while in the chronic conditions, there are more likely to be degenerative changes. He referred to the work of Dodd, who some years ago collected 700 or 800 cases and submitted statistics showing the value of these observations in computing the probable duration of life. He referred to the observation of a number of cases made by himself at Blockley, and stated that while about 45 per cent. showed albuminuria, but very few revealed eye-ground changes, and this had been further confirmed by the observations he had made at the Polyclinic Hospital. He reported the case of a male, thirty-two years of age, who had had albuminuria for at least twelve years, although he has been giving careful attention to hygiene and his habits are almost ideal. At one time he was able to find a few fine yellow spots, but they disappeared and have not recurred. He also referred to another case which had been watched closely for a long time, and in which there were no changes observed until shortly before death, when violent degenerative changes occurred.

Dr. William H. Good referred to the fact that according to physiological chemistry, the osmotic pressure of fluids depended not so much upon the kind of molecules present, but upon their number, and felt that perhaps the same line of reasoning would explain the effect of large quantities of proteids, by increasing the osmotic pressure of the blood, which must be gotten rid of through the kidneys, and also discussed the question as to whether this action was due to a chemical substance or to the back of some internal chemical secretion.

Dr. W. Hershey Thomas referred to the various surgical procedures, which had been resorted to for the relief of this condition, and stated that, here as elsewhere, much more valuable information could be learned regarding the pathology of the condition during operation than after death. After which he referred to the operations by Edebohls, Harrison, Israel, Guiteras, Van Cott and others, giving in detail the different operations performed by operators and the results.

BOOK REVIEWS.

CHINESE MADE EASY. By WALTER BROOKS BROUNER and FUNG YUET MOW. The Macmillan Company, New York.

"AS HARD AS CHINESE" has almost passed into a proverb, therefore it is with something like a gasp of astonishment that we first catch a glimpse of the title of "Chinese Made Easy." Yet here it is, a rather bulky volume to be sure, but cheerfully bound in red and gold, so alluring in appearance that one feels eager to open the gay covers at once. Following true Chinese order the reader must turn to what would be the last page of an American book, and here he encounters an *Introduction* by Dr. Herbert A. Giles, of the University of Cambridge, a scholar of no small repute, who is himself the author of several works on the study of Chinese. Thereafter follows the *Preface* where the authors, Dr. Walter Brooks Brouner, of Columbia University, and Fung Yuet Mow, a Chinese city missionary in New York, briefly set forth the motives which inspired them to present this work to the public, and point out the advanages of their method of presentation over those usually employed in teaching Chinese to foreigners.

The greatest innovation is the abandoning of the usual system of "tones" or "breathings," that is, the placing of circumflex accents at the corners of certain Chinese characters, in the effort to distinguish the same character as applied to different things. This method, the authors claim, is artificial, unnecesary and never used by the Chinese themselves, as they are able to distinguish the same character used in different contexts, exactly as we recognize the difference between the English words *pane* and *pain*, identical in sound, but varied in meaning. This "tone" system has always been a great obstacle in the path of all European and American students of Chinese, and its removal does much to make the language appear much more "easy" than has ever before been the case.

The authors also lay stress upon the fact that Chinese, although originally a monosyllabic tongue, now consists largely of compound words, and these compounds may be readily analyzed into their original component parts. Chinese has no alphabet, as has been frequently noted, but it does possess 214 radicals or "root words," from which all the characters used in the written language are made up. The book sets forth a rational method of analyzing and understanding the very numerous characters used in writing Chinese, and supplies a vocabulary of words ordinarily employed in writing and speaking, together with instructions for using a Chinese dictionary. These are only a few of its many features of interest, but will serve to point out the entirely new path which the authors have opened up to the student. The book deals with only one of the main dialects of China—that is, the Cantonese. This particular dialect was selected on account of the fact that the greater part of the Chinese now resident in this country are natives of the Canton provinces. The written language is the same all over the Empire.

"Chinese Made Easy" bears throughout the evidence of the most detailed and painstaking labor, and is certainly a very noteworthy addition to the existing text-books of that obscure and formidable language. Yet, while we join with the authors in the hope that a day may come "when a knowledge of the Chinese language will be as common an accomplishment as a knowledge of German, French, Spanish or Italian is to-day," we cannot help fearing that that day is still some time in advance. But to those who have an urgent desire to add a knowledge of Chinese to the list of their linguistic accomplishments, "Chinese Made Easy" may be most heartily recommended as offering by far the most simple, practical and "common-sense" method of acquiring this language which has yet been presented to the American student.

LIGHT ENERGY. Its Physics, Physiological Action and Therapeutic Applications. By MARGARET A. CLEAVES, M.D. Rebman Company, New York.

SO MUCH has been heard of the action of light in medicine in recent years that a book like the present, which contains all the scientific principles of light action, will fill a definite want. The book is excellent in make-up, in matter and in the form in which it has been cast. The first 130 pages contain the Physics of Light, then 300 pages are devoted to the biological effects of light in its various available forms. Light exclusion and its beneficial effects in pathological conditions take up two chapters, some 40 pages. Various forms of radiation, including the N-rays radium and fluorescence are treated, and, finally, the pathological effects of light. In readily available form the book contains all the physician may desire to know about the use of light in medicine. In its thoroughness the work reminds us more of some of the foreign monographs than what is usual in this country. We are glad to welcome it as an addition to American medical literature.

SURGICAL TREATMENT OF BRIGHT'S DISEASE. By GEORGE M. EDEBOHLS. Frank F. Lisiecki, New York.

IT is certainly gratifying to have from the pen of the surgeon, who has done most in America to popularize the surgical treatment of chronic nephritis, a concise and lengthy monogram on the subject. Two-fifths of this book, which comprises over 300 pages, are devoted to the author's contributions to renal decortication, which are arranged in chronological order of publication. The remaining three-fifths are entirely new matter, never before published. This deals almost entirely with the results. Not an insignificant number of pages of this interesting volume are consumed in discussing the question of priority.

The histories of seventy-two cases are given in full and are followed by a very careful analysis. It is almost needless to state that the author's conclusions are to the effect that decapsulation is essentially the method of treating chronic nephritis. Whatever may be the opinion of the surgical profession at large, the advent of this book must be looked upon as a justification of the author's well-known views upon the subject. One closes it with the conviction that whether or not the author's interpretation of the manner in which he obtains these results, is correct or incorrect, the improvement noted in so many cases, whatever its source, justifies, under favorable conditions, the employment of surgical treatment for chonic nephritis.

BEAUTY THROUGH HYGIENE. Common Sense Ways to Health for Girls. By EMMA E. WALKER, M.D. A. S. Barnes & Company, New York.

THE series of which this little work is one includes a number of books of great practical interest to the modern woman, but none, we venture to say, that is written with more practical directness, with less waste of words, or with more careful attention to what is absolutely necessary for an easy understanding of the matter in hand than the present volume. All the details of the relations of health and beauty are simply

but thoroughly treated. The necessity for consulting a physician rather than take drugs by friendly or advertisers' suggestions is pointed out, yet if the book has a fault, it is that perhaps there are more drug hints in it than is quite suitable for the general public, especially as it is likely to be used mainly by young people.

Epitome of Nervous and Mental Diseases. By Joseph Darwin Nagel, M.D. Lea Brothers & Company, Philadelphia and New York.

Nervous and Mental Diseases are apt to be the bête noir of the medical student and the young general practitioner of medicine. If approached with confidence and systematic method they prove interestingly problematic instead of hopelessly complex. This little volume contains just the information likely to start the seeker on the road to a definite knowledge of one of the most important subjects in modern medicine. In spite of its small size it is quite complete and satisfactory in detail and contains some helpful illustrations.

The Principles of Hygiene. By D. H. Bergey, A.M., M.D., Assistant Professor of Bacteriology, University of Pensylvania. Second Edition. W. B. Saunders & Company, New York, Philadelphia, London.

Dr. Bergey's book, in its second edition, contains some excellent additions. Now that animal parasites have become so prominent a feature even of life in the United States, the chapters on these pests and especially the suggestions as to prophylaxis, are sure to be valuable. The paragraphs on fleas show how this little insect is coming to deserve even serious medical consideration. Army and navy hygiene are subjects of special import now, and are treated correspondingly. In general, it may be said that Dr. Bergey's book will deserve in this edition the same popularity that exhausted the last edition in about two years.

Annual Report of the Department of Health of the City of New York for the year ending December 31, 1902. Martin B. Brown Company, New York (Health Department Publication).

Health departments of smaller cities and towns not sure of what they should do to improve the health of their communities will find an ample field of suggestion in this volume. The questions of milk, hygiene, of care for the water supply, of the smoke nuisance, and other specialties, are treated in this volume, as well as the regular data of the health report for the year.

The Surgery of the Heart and Lungs. By Benjamin M. Ricketts, Ph.B., M.D. A History and Résumé of Surgical Conditions found therein and Experimental and Clinical Research in Man and Lower Animals, with Reference to Pneumonotomy, Pneumonectomy, etc. The Grafton Press, New York.

The first impression one receives on opening this rather large volume of 500 pages, is that the work has been very freely illustrated. Many of these illustrations are microphotographs, the rest, almost without exception, are photographs of gross laboratory specimens. One of the most valuable parts of this work will be found in the chapter on "Practical Hints and Theoretical Considerations." These are deduced and suggested by the author's experiments on dogs, nfty of which are fully tabulated and described in an appendix. These hints cannot fail to be of great value, not alone to practical surgeons working on the human being and to experimenters, seeking to corroborate the author's findings or to further the interests of the surgery of the heart and lungs, but to all laboratory workers as well, who are engaged in any form of research surgery on the vertebrates. The book is, therefore, to be cordially recommended to all laboratories of surgical research. The very full bibliography attached to each chapter is in itself of the very greatest use and value to all.

An interesting feature of the book is the table of terminologies, which is full and much to the point. Some such table might well be duplicated, to the manifest advantage of students, in text-books on general surgery. A commendable effort evidenced throughout the book to render the work comparative as well as human, in conjunction with the special characteristics already noted, justify the expression of a belief that the book, though not destined for wide circulation, will be welcomed and appreciated in certain rather limited circles.

A Text-Book of Physiology. By Isaac Ott, A.M., M.D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia. F. A. Davis Company, Philadelphia.

In his preface the author states that his book is not a treatise but an elementary work. No attempt has been made to describe laboratory technic or to discuss electro-physiology, a subject which occupies too much space in many current works, and no time is wasted in reviewing the literature of doubtful hypotheses. The chapters on the circulation and blood are especially good, and are considered from a practical clinical standpoint. One might wish that certain subjects were treated a little more fully for examination purposes, but full references are given for consultation. The illustrations are clean cut and intelligible, the typography is good and the book deserves a wide popularity, both in medical schools and among the shelves of physicians' libraries.

Transactions of the American Pediatric Society, Fifteenth Session, held at Washington, D. C., 1903, edited by Walter Lester Carr, M.D. Reprinted from *Archives of Pediatrics*, 1903.

As the membership of this society includes the leading pediatrists of this country and Canada, the papers here published well represent American thought in relation to children's diseases. It would be too much to attempt to indicate all the papers and their authors, but, selecting at random to indicate the general trend of the articles, we might mention Edsall's Study of Still's Type of Chronic Polyarthritis; Holt's on Abscess of Lung following Acute Pneumonia; Shaw's Determination of Fat and Total Solids in Milk, and other papers on Infant-Feeding and Milk; several papers on Affections of the Newborn by Wilson, Snow, Hamill and Nicholson; and a discussion on the bacillus of Shiga by Flexner, Park, Koplik, Holt, Knox and Booker.

Essentials of Medical Chemistry. By Lawrence Wolff. Sixth Edition, revised by A. Ferree Witmer. W. B. Saunders & Co., New York, Philadelphia and London.

This new edition needs no extensive review. The work has shown itself to be useful to students. While opinions may differ as to methods of imparting this type of knowledge, we agree that for the type of work it is one of the best of its kind. It is conveniently arranged and most of the new matter of recent years is included

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ORIGINAL ARTICLES.

DIAGNOSIS OF DISEASE IN CHILDREN.[1]

BY J. MADISON TAYLOR, A.B., M.D.,
OF PHILADELPHIA.

MEDICINE is approaching the exactitude of a science only in recent years. This is due mainly to the indefatigable labors of physicians at the bedside and in clinical laboratories, also to researches of the chemist and physicist.

Nevertheless, to the reader of medical literature there often comes a sensation of discouragement on encountering the accumulation of statements often contradictory, conflicting or unrelated, on the same lines of thought. The fault lies in approaching the subject without the exercise of a wise critical faculty attainable only through a practical familiarity with the laws of chemistry, physics, comparative biology, anatomy and physiology. It is by no means necessary that this knowledge should be full or elaborate, but the constant use of a fair and clear concept of fundamental truths, conditioning these subjects, is entirely feasible and most necessary.

Upon such a concept alone can a sure foundation be laid for progressive medical thought capable of uniform acceptance and practical results. Diversities in belief must always exist and aid in the development of truth, but in medicine these divergences are so wide and contradictory that we repeatedly fall under grave accusation of cherishing inconsistencies most hurtful to those seeking our advice. A tendency is plainly discernible now, however, among the best authorities to get back to elemental principles in forming decisions and recommendations. The one principle which must ever guide us is to think in physiologic factors in diagnosis as well as treatment.

On the subject of diagnosis a monumental literature exists testifying to skilful observation and patient gleaning among the products of wise minds, cemented by the systematic presentation of well formulated rules. Too often this resembles a towering mass of varied and suitable building material, rather than a finished and symmetrical structure evidencing skilful design. Much of this material on examination will stand revealed as a mere mass of authoritative opinions which obtain currency because of the keen observation of certain early men of genius, yet is far from exact, and much will prove to be mere variants in the history of outworn beliefs. Cherished and respected opinions of great thinkers, especially when simulating truths, have always exerted more influence on medical belief than is warranted. Our tendency is to retain these postulates of earlier teachers rather than to use, as working formulæ, the fundamental principles of growth and change, whereby alone we can do sound reasoning. We want not so much new facts, as a more practical application of those already recorded and tested, yet scattered and often unrelated truths whose efficiency is often almost lost by being locked up in large treatises, such as on physiology and pathology. The use of these treatises is largely confined to scientific specialists, and too rarely consulted by clinicians. Again our students should have no fascinating theories taught them, only well-attested facts and truths. Conjectures come to all. We need nothing in medicine more imperatively than teachers with clear practical minds who shall glean the best conclusions of reliable observers and research workers, and present these to the undergraduate in concrete systematic fashion; in tenable formulations unmarred by brilliant theories.[1] A constantly recurring error, dominating our concepts of disease, is the tendency to assume one or two symptoms as pathognomic and lose sight of the symptom-complex. A single obvious symptom may be predominant in a well-defined disease, but it may also be an expression, or characteristic feature, of many pathological processes; at other times it may be the result of previous degenerative changes, a neurosis, a psychosis, or expression of metabolic instability the result of neurotic disturbance. Indications obtained through peripheral phenomena reveal much, but conspicuously little attention is given to a study of many recognizable phenomena the immediate result of reflex disturbances in the segments of the cord. Knowledge of the intimate relationship between the arterio-motor mechanism of the organs, the nutritive centers and outlying parts of the body is needed to interpret many generic qualities of disease. Later the parts affected, or obviously disturbed, may and do require attention, but not to the exclusion of the primary or central derangement. We need broad-minded teachers who shall make clear the fundamental principles of early changes from the normal process, the governing innervation, direct and vasomotor, hence the normal variations in the blood supply, lymph circulation, cellular equipoise and, above all, the earliest evidences of divergences therefrom which may proceed so far as to merge into abnormalities producing changes recognizable as disorder, hence passing on to structural alterations sufficiently extensive to be regarded as pathologic, and finally into lesions. To do this should not tax ordinary professorial knowledge,

1 Read by title before the Section on Children, American Medical Association, June, 1904.

1 Conversation with many professors in medical schools confirms this opinion.

it merely demands a change in the point of view, keeping in mind the simple immutable laws of growth and presenting them in such a systematic fashion as shall best explain the pathologic lines of least resistance.

The subject of disease in childhood or youth can never become plain as it should till the physiologic variations between the young and the adult are differentiated for the student. This knowledge may exist, but it is seldom formulated and presented to the undergraduate. Few textbooks allude to childhood physiology except in early chapters, and then inadequately. Those of us who have grown gray using the older methods may be eagerly alive to the importance of a different standpoint of teaching, but we can not do what younger men will ere long accomplish.

In diagnosis we have been for centuries proceeding on deductive lines, amassing a vast amount of accurate information, based on, it may be, sound scientifically winnowed facts and thence advancing to conclusions more or less practical. When there are more who shall be trained to proceed inductively along the foundation levels of biology, embryology and physiology and thence ascend to pathologic planes, vastly more light will be afforded by which to apply therapeutic principles from the same sources.

We must know more of normal growth and the phenomena of development. The energy of growth is a colossal force and significant in many departments. This may be defined as the sum of all the forces determining physiologic work causing the development of living organisms (Tremoliere) potential energy exists as a heritance in the ovaries. After birth energy is required from without as well as from within. While in the adult nutrition is necessary only to supply waste of the tissues, in the growing child many conditions demand hypernutrition due to its rapid development. (Ballantyne.)

The child of rapid growth usually fails of symmetric development in several directions. Disease processes, infections, accidents of nutrition, environmental influences, etc., all tend to initiate and emphasize minor deformities. Overgrowth usually leads, for instance, to poor thoracic capacity. If the thorax is for any reason disproportionately small and narrow a variety of special predispositions are encountered. In such individuals glandular engorgements and inflammations are common and difficult to control. Pneumonia is more severe and dangerous, also pleurisy, heart disease, especially carditis, peri and endo.[1]

Inadequate gaseous interchanges aggravate disorders of both lungs and intestines; the eliminating organs are oppressed, congestions are encouraged in various parts, and oxygenation is impaired. Of the potentiality of the full functionation of the great ductless glands we know as yet relatively little. When we do know, and our means of recognizing them are better specialized, it will afford excellent grounds for legitimate inferences and useful conclusions.[1]

In diagnosis our primal purpose is to recognize and elucidate the onset of functional derangements and detect disease in any stage or form. If, however, we fail to devote sufficient attention to morbid phenomena of the mind and morals we perform less than half our duty. Disorders of the mind are dependent upon one of two factors; either defects of development in the brain, or diseased processes of the brain, or retroactively. The purpose and aim of diagnosis rests upon the concept that by the early recognition of manifestations of morbid physiology we shall thereby find means to check the changes which would otherwise pass on to destructive alterations.

If this proposition obtains for the disorders of the physical functions how much more must it fulfill a valuable service for those of the brain which is a far more sensitive structure and especially liable to permanent damage form slight irritation. It is a great privilege, to mitigate bodily suffering, to limit the progress of structural degenerations, to prevent disablement and save life, but how vastly higher is the prerogative to turn aside those perils which jeopardize the budding intellect and rescue a tottering moral nature. Yet how little of this subject is the student taught, or again how much interest does the average practitioner display in this incomparably higher phase of his duties?

It should be the aim of the clinical teacher to emphasize unceasingly the urgency of obtaining the earliest possible indications, omens or prefigurements of departures from normal functionation; especially in children. When this is accomplished the greatest economy is effected; first, in the limiting of suffering and the progress of disease, and second, in forefending the organism from developmental defects. All life is a process of development but the effects of interferences are vastly more forceful and significant in the young. Diagnosis and symptomatology, as ordinarily presented, is adjusted to meet the requirements of well developed disorders with only secondary reference to the phenomena of onset. There is room for much useful research along the lines of prodromal and the first obtainable characteristic morbid phenomena. True it is that some of these early omens are not conclusive, but certain of them are more significant than credited. Certainly greater attention may be well bestowed upon their formulation and emphasis, for here are many of our triumphs or blunders to be made, unless our defects are mercifully condoned.

Diagnosis of the morbid condition of child-

[1] Woods Hutchinson's researches on the thoracic index are most suggestive. Jour. Am. Med. Assn., May 2, 1903.

[1] Charles De M. Sajous has done great things to make this clear and leaving out the significance of his conclusions, still his book teaches us to think physiologically on growth and change. The second volume of "The Internal Secutions," with the contents of which I am familiar, will supply invaluable data by which we may learn to reason more soundly.

hood involves something more than a mere search for evidences of disease. During the period of plasticity numerous influences prevail in all ranks of life to alter normal growth and organic development by which the foundations of constitutional weakness are often laid. These are in a great measure, preventable, at least in part. It is the duty of the physician to recognize and promptly rectify the evil effects of environment and training, and in so far as possible of inheritance. Hence it is the most important department of differentiation to possess clearly defined standards of growth, proportion, activities, sensitiveness, functional competence, intelligence and capacity for endurance. These standards should be the products of wide observation, reading, and experience, among normal as well as abnormal conditions, but unless tempered by judgment of a higher order, right conclusions are not assured. It should be the duty of clinical teachers to formulate prototypes which may obtain certain recognition. A careful presentation of the anatomy of childhood should be always offered; there is little enough in literature.[1] We can know little of the essential nature of childish ailments till these needs are better supplied. No heaping up of scientific facts along the lines of bacteriology, pathology or symptomatology can compare in practical utility to an equipment in applied physiology based on comparative embryology.

As physiology is generally taught it serves a limited purpose but when once the student realizes that practical thinking in pediatrics can only proceed from a use of the principles of embryology our concepts will be clearer.

The standard for each pediatrist is the ideal child; a composite picture of normal children, and cannot be formed too carefully nor from too thorough an interpretation of the data at his command. Next to the ideal child the diagnostician must erect for himself examples of permissible variants. In considering the broad subject of disease in the young, at least in America, we must not limit ourselves to children of pure Anglo-Saxon stock but hold in view the many other racial characteristics with which we are likely to come in contact.

Again, there are the crosses of Latin, Celt, Slav, German, Hebrew and other white races; also the hybrids of red, yellow and black races. These modifications exhibit laws of their own, as yet by no means clear, but deeply significant.

Inheritance of tendencies is recognized as a potential factor by most authorities. Where doubts obtrude on the mind of the clinician, as they inevitably must, the safe course is to read the latest teachings on the subject of inheritance and heredity and sift out the acceptable conclusions. Predisposition to disease is an obvious factor, admittedly forceful for harm.

1 Among the best are those of George McClellan, Symington and J. W. Ballantyne. There is no systematic physiology of childhood in English. Scattered facts exist on both these subjects but they might be better correlated.

Difficulties of diagnosis are many enough among children normal in structure, in neural balance and in mind, but these grow greater where constitutional variations or deviations are present. Hence it is desirable to consider variants of types; peculiar and exceptional children. The normal processes are profoundly modified by peculiarities of temperament due to inheritance or acquired. This subject would demand, for full consideration, much space, but it will suffice here roughly to outline the salient points. The most valuable and suggestive literature I have found is that which emanates from the studies in childhood psychology instituted by E. Stanley Hall. An article by E. W. Bohannon covers the ground sufficiently to warrant using his classification, and though the study is more psychic than physical it is most helpful in diagnosis. The psychic factor as stated, demands deeper attention in clinical medicine, especially among children, than ordinarily obtains.[1]

The number of those studied by Bohannon was necessarily limited but covers over 1,000 individuals, enough from which to formulate certain types of mental and physical conformation. These types are the heavy, the tall, the stout, the small, the strong, the weak, the deft, the agile, the clumsy, the beautiful, the ugly, the deformed, those with birth marks, the keen and the mentally precocious, those with defects of sense organs or mind, the nervous, the clean, the dainty, the dirty, the disorderly, the obedient, the disobedient, the orderly, the teasing, the buoyant, buffoons, the cruel, the selfish, the generous, the sympathetic, those with imagination, the liar, the ill-tempered, the silent, the dignified, the frank, the loquacious, the inquisitive, the courageous, the timid, the whining, the "spoiled," the gluttonous, and the "only child in a family."

Many of these types cross; several are liable to include similar features, constituting composites of the types, making the study most complicated if carried to legitimate conclusions.

A review of Bohannon's findings and conclusions from the observation of this large group reveals much of practical interest to the clinician. It is manifestly impossible to discuss all, but confining ourselves to a few words about those types in which the physical features are dominant will prove of value. As to general health and mental ability there appears good reason for believing that the larger children, except the extremes, are superior to others. But it must not be forgotten that there are pathological cases in the group, especially in those showing marked departures from the average. Leaving out of account possible tendencies to acromegaly or myxedema they suggest a too early maturity. They are generally even-tempered.

Small children evidence delayed development. The less vigorous show degenerative phenomena, many are "delicate," ugly, deformed, or vicious,

1 The recent book by E. Stanley Hall on "Adolescence" deals fully with the subject.

dull, mean or spiteful and tend toward morbidity. The strong children, while exhibiting many admirable qualities, are likely to be aggressive, harsh, course, rough. More is expected of them, hence they are often exhausted by compulsory work; their offenses are the result of excessive, often explosive, energy. The weakly children are likely to show pronounced evidence of degeneracy, often they are ugly and deformed, cruel and mentally deficient. Inheritance was not so frequently recognized a cause as parental follies, especially during the embryonal period. Temperamentally they are usually unfortunate.

The deft and agile show better health, yet are undersized. Clumsiness is found due to two causes; first, of want of development of the mechanism which functions the accessory movements; and, second, excessive inhibition of the same along with lack of emotional balance. Ugliness is usually accompanied by many evidences of degeneration physical and mental; in the deformed these deviations are even more decidedly present. Deformities are largely *ipso facto* manifestations of deviation, defects of central development exhibiting anatomic and physiologic faults, some of which are remediable. Under good care many of these improve greatly, some becoming fine adults. They are found to be treated with amazing lack of consideration by parents and associates, hence they suffer temperamentally.[1]

Among those showing defects in mind, sense organs and speech, there is much to indicate a general decline. They are morbidly retiring, dependent, and lack symmetrical development in part due to original defects and deficiencies in normal stimulus.

Those children grouped as "nervous" exhibit delicacy and instability of constitution; they lack size and vigor, are timid, sensitive and changeful, disposed to be irritable and meddlesome, lacking in control, hence untruthful. The extremely overdainty and the distinctly dirty, each excite suspicion of mental abnormalities. Buoyancy and teasing both indicate excess of energy; so also of cruelty, but here ancestral traits seem manifested.

Lying and imaginativeness are allied, and point to lack of self-control or selfish imitation; the associated traits are disobedience, ill-temper, thieving and bad health. Those who are peevish, untruthful, discontented, are usually of delicate make and evince instability and poor vitality. Those who are loquacious, voluable and inquisitive, lack inhibition.

Courageous children are usually healthy and strong in mind and body. Timidity has a physical basis, but may be acquired from bad environment. The "only child in the family" in 66 per cent. shows disadvantageous traits; they are usually of poor health, lacking much of normality, both mental and physical.

The "youngest child" the "only boy" or "the only girl" display many striking resemblances to the "only child." The value of such conclusions from a statistical study is very great; especially when it is noted that the writer started out with the expectation of arriving at, in many directions, radically different conclusions.[1]

In the examination of children next to a trained observation the most necessary item of skill lies in palpation. Extensive experience is needed to acquire this facility. Long years are not so efficacious as the consciencious use of every opportunity offered. Tactile sense grows rapidly if undivided attention is given to a few cases; more are better, but carelessness and guess work are liable to follow redundant advantages. Estimation of resistance, the tone of tissues, skin and subcutaneous structures, conditions of overcontraction or relaxation, temperature and the like are often of deeper significance in the infant than in the adult. Size and relationship of abdominal organs can thus be more accurately learned than by percussion, which in the very young is of less than secondary importance; indeed often misleading. The left hand, in right-handed persons, should preferably be trained in tactile acuteness. The hand should be laid down, quietly and gently, flat upon the part with a lingering touch permitting an appreciable amount of time to elapse for sense impressions to grow and become deliberately interpreted, imitating the methods of the blind. Much can be thereby learned not readily reducible to language yet helpful to conviction. Pure touch is suggestive, but a combination of contact and manipulation, supplemented by slow, tactful pressing and relaxing, reveals far more. So much concerning the areas usually explored by palpation, such as the abdominal and thoracic viscera, but much can be learned by the hand applied to all parts of the body, an act too rarely practised by physicians, and not thoroughly by some surgeons, whose search often involves less thoroughness than it might.

The consistency of the skeletal structures, particularly those adjacent to the vertebral column, will afford evidence of great value later to be defined. A highly significant phenomenon is the quality of resistance in the muscles, such as those of the neck in many conditions, both physical and psychic. Few children are too young to betray at some time or other rigidities, transient or protracted, yet significant of alterations in tissue from lymph stasis, nerve irritation or psychic exaltations or depressions. The educated hand is not employed to the extent it deserves in search

1 Boys are more liable to deformities than girls. Warner's Studies of London School Children, showed that the proportion of physical anomalies of boys was 8.27 per cent. to girls 6.78 per cent. Again, according to Newsholme (vital statistics, p. 61) the males outnumber the females in stillbirths, probably owing to the greater difficulties at birth. Thus in ten years, 1865 1875, there were in France, 144; Italy, 140; Belgium, 135; Sweden, 133, and in Prussia, 129 male, to every 100 female stillbirths. This seems to throw light on deformities incident to difficulties in labor; also thus intra-uterine disturbances are much more likely to occur with boys than girls. (Bohannon).

1 It is impossible here to review Bohannon's "Interpretation of data," but this is highly recommended to those who would get a fair idea of inheritance and heredity, both of physical and psychic traits. (See Pedagogical Seminary, October, 1896.)

for collateral data in organic disturbances and particularly where, as is common, the psychic state has contributed to induce excessive tensions or relaxations. In adults emotional disturbances often produce conspicuous hypertensions gravely affecting the continuance or exaggeration of lesser physical derangements which are happily often entirely relievable, mainly by teaching the sufferer to let go and relax. To a less, but appreciable degree, this obtains also among children and cannot be ignored. In acute diseases one often finds that pain is present, local or general, not so severe as to cause a cry perhaps, but merely altered sensitiveness beyond the degree of discomfort, and manipulation often relieves this to the extent that symptoms modify, sleep follows, temperature drops, etc. Abdominal organs frequently grow tense from gaseous distentions and skilful manipulations over the distressed area often relieves this, or gentle pressure may be applied over the lower dorsal or lumbar region; muscles may ache, nerves become tender from retained toxins and thus limbs or back, but especially the deep structures of the back or neck, become hypersensitive to the pressure and contractures arise.

It would seem admissable that few or no disease processes can exist in the body without manifesting themselves by disturbances of the nervous mechanisms of the area or parts involved.

These are brought about by changes in the circulation of central nervous system. A large part, by far the greater proportion of the nervous mechanisms of the body are located in the spinal cord. Again, disturbances of the circulation in the spinal cord have been found to be expressed externally by alterations in the conditions of the tissues supplied by the posterior primary divisions of the spinal nerves, as well as in the peripheral parts diseased.

A recent and most important contribution to the study and elucidation of disease, has been made by the observations of John P. Arnold and published in the *International Medical Magazine*. As demonstrator of physiology in the University of Pennsylvania, he made special researches on the clinical significance of the inter-relationships between the blood supply of organs and their functual activities, and claims to have systematized our knowledge of the vaso-motor mechanisms. This method of diagnosis is based upon rational physiological principles of much utility, not only of and for itself, but confirmatory of data gained through other avenues. Oftentimes by this method much can be learned more helpful in outlining treatment than through any other sources, because explanatory of the character of the derangement and on broader principles, supplementing facts learned otherwise.

He points out that there is a compensatory relationship between the circulation in the tissues of the back, lying adjacent to certain areas of the cord, and the circulation in the local segments.

Elaborating these observations he has been able not only to modify acute and chronic ailments, often to an extraordinary degree, but has also evolved a system of diagnosis. This last is so helpful that, when perfected and amplified by clinicians, it seems destined to offer a more exact and yet simple means of estimating the nature and extent of derangements than is afforded by many of our commonly accepted means of physicial exploration, as well as supplying important therapeutic possibilities.

Thus the phenomena of disease are studied from the standpoint of the central nervous system and not only from peripheral phenomena.

This department of symptomatology is still in its infancy, and even in the hands of enthusiastic experts can as yet only reveal indications. More accurate specifications and gradations can be reached in proportion to the personal equipment of the observer in physiologic knowledge and the natural history of disease. When clinical phenomena shall be interpreted more closely along physiologic lines and this principle recognized and employed by a larger number, we may expect records of refinements and exactitudes revealing many facts hitherto unattainable.

The principle on which this system of diagnosis is founded is the well established fact, familiar to physiologists, but not yet applied by clinicians, that a reading of the viscero-motor and other activities must be sought through a comprehensive knowledge of the vasomotor mechanisms, and the spinal segments from whence a viscus is controlled.

Much importance is ordinarily attached to the agency of the sympathetic nervous system. When, however, it is borne in mind that this system is a mere outgrowth from, and entirely secondary to, those centers in which impulses are initiated and controlled, we must approach the subject of organic and other derangements with the significance and responsibility of the centers in the cord and in the various segmental combinations, kept constantly in view. The prevailing belief as to the source of the functions of the sympathetic is well illustrated by M. Duval (Sajous) who says, "It is now recognized that most of the nervous phenomena of the visceral functions have the spinal cord for their centers, and that even for its vasomotor functions the sympathetic nerves utilize only borrowed power originating in the upper portion of the spinal axis; the same obtains in respect to its influence upon the heart, and also with most visceral reflexes, the centers of which are in the cord; so that even the expression sympathetic system to-day means nothing."

Further, effects upon the blood supply of all parts of the body can be wrought by influencing the centers in the spinal cord more directly and simply, and through them exerted upon the sympathetic centers and ganglia, than from measures directed to the organs disturbed. Per contra, disturbances in the various organs, systems, and tissues, being due to circulatory changes induced

reflexly upon the central nervous system, the major portion of the nervous mechanism being located in the spinal cord, disturbances of the circulation in the cord are expressed by alterations in the structures of those parts supplied by the posterior primary divisions of the spinal nerves, as well as in the part affected. It is then to be inferred that local changes will be manifested in the tissues of the back along side the vertebral column. During the continuance of diseased states, or lesser disturbances, pronounced alterations are to be observed in those tissues immediately innervated by fibers arising in the spinal segments whose integrity is disturbed by the derangements in function of organs and areas dependent upon those segments. In brief there is both a nutritional and sensory reaction exhibited upon the erector spinæ muscles, and allied structures, caused by the disturbed circulatory equilibrium in areas depending for vasomotor regulation on certain groups of segments of the cord. There is, as has been said, a compensatory relationship existing between, first, the surface muscles and the skin supplied by the posterior primary divisions of the spinal nerves, and second, the blood vessels of the cord and the deep structures, organs and remoter parts innervated by fibers whose cell bodies arise in that region of the cord.[1]

Almost nothing is to be found in the literature of clinical medicine which directs attention to the varying conditions of the structures of the back. Orthopedists seem to confine their observations chiefly to the gross conditions of the ligaments, muscles and bones. Neurologists take little account of the gross status of tissues, other than those showing alterations, motor or sensory.

Irregular practitioners of one type or another have, from time to time, attached much significance to the status of the ligaments and attitudes of the vertebræ. "Dislocation of the bones of the back," as a common cause of functional derangement, is not for a moment to be accepted. The highest authorities on anatomy state that, except when long standing or progressive disease processes have been the cause, as in aggravated "lateral curvature" or tuberculous disease, changes in relationship of the vertebræ are practical impossibilities. Relaxation of the lateral and posterior spinal ligaments, due to nutritive faults, produces often the appearance of dislocation, but these phenomena disappear by restoration of the tonus of the shrunken tissues, chiefly through mechanical stimulation.[2] Thus, any agent which causes vasoconstriction in the nerves and muscles of the back, contiguous to the spinal column, will produce, per contra, dilatation of the vessels in the cord, and of the organs and parts beyond in the line of innervation.

Any agent which produces dilatation of the blood vessels supplying the tissues of the back will, by compensatory action, induce constriction in those of the cord, and beyond parts. The significance of this is at once made plain and its value manifested not only as a factor in diagnosis, but in treatment.

The element of doubt which can be urged against this view, is not that the especial conditions to be described actually exist. Highest physiologic authorities can be cited to prove the first, but whether this alteration in the tissue resistence or vaso-tonus can be demonstrated to such an extent as will produce any practical results in either the muscles, or more potently, in the functional status of the organs and peripheral parts, depends upon the evidence of clinical results. This is amply demonstrated to those who have studied the question practically.

It is plain to the perceptive hand that these muscles are affected, and according to definite laws of innervation, showing conclusively that where certain organs or parts are deranged, the corresponding muscles do show these changes. Again, where these muscles exhibit characteristic changes there are assuredly derangements in the organs and tissues corresponding to the innervation.

Again in the normal individual these compensatory conditions are not conspicuous, but where there is a definite derangement the evidences are obvious and clearly demonstrable, and most helpful in diagnosis.[1]

Dr. Arnold formulates certain generalizations which are to be noted upon a careful survey and palpation of the back. On inspecting the back of one who is, and has always been, perfectly sound there will be seen (if certain attitudes are assumed to bring them into prominence), the spines of the vertebræ in normal alignment, distance apart, and degree of posterior projection. If there has been a history of long continued or recurrent disturbances of the internal organs these are frequently revealed by alterations in the tonus of the blood vessels of those muscles and other tissues innervated by, or lying adjacent to, the governing segments of the cord from which the organs at fault are reflexly controlled through their vasomotor connections. The form change exhibited is an atrophy of some, infiltration and thickening of others; and if long continued by asymmetries of the vertebræ, the spines apparently pointing in different directions. If the lesions have become chronic the spines are found separated, due to relaxation of the posterior ligaments, until between two or more marked depressions appear, or several are depressed below the normal line of projection. This disor-

1 The spinal cord viewed from the embryologic standpoint is a cylindrical tube of nervous tissue made of the fusion of bilateral ganglia in some of the lower worms. This view of the spinal cord is essential to the proper concept of the nervous mechanisms to man and the higher animals.

2 Attempts to "replace" these so-called "dislocated bones" and to relieve pressure on nerves, the creed of the osteopath, sometimes results in benefit, not by accomplishing the object aimed at, but through effects wrought upon the centers of vaso tonus and lymph activities by mechanical or other stimulation. Where, as sometimes happens, undue force is used to "pull or push" these tissues in place, harm is often wrought of which little is said, or to which other causes are assigned.

1 It must be said, however, that unless the observer possesses more than the average tactile acuteness, nothing will be noted except certain gross infiltrations or atrophies. Persistence will be rewarded by soon achieving much satisfactory information.

ganization of the vertebræ is more apparent than real, the asymmetries being due to loss of tone and relaxation in the supporting ligaments, will disappear later as is proved by a prompt restoration of alignment under appropriate treatment. In children, even very young ones, these phenomena are readily noted as has been done for two winters in my clinic at the Children's Hospital, where certain fourth-year medical students beside my assistants, usually four in number, have acquired much dexterity in detecting these changes.

The examination of the patient should be made while lying on the side and facing the operator with the head slightly elevated and all the limbs so arranged as to secure the utmost relaxation of the tissues of the back. The palpation is made by the cushions of the examiner's fingers lightly placed over the structures next to the line of the vertebræ. He draws them gently upward and downward to and from the vertebral column an inch or two, rolling the muscle fibers under hand, and carefully estimating their density, elasticity, and separability; with just enough pressure to determine resistance and sensitiveness. After gently palpating the entire length of one side of the spinal column the patient is turned on the other side and the examiner again facing the subject the corresponding tissues are studied in the same way. Finally the patient assuming the dorsal decubitus, the examiner stands at his head and the lateral and posterior tissues of the neck receive attention.

In most acute conditions and exacerbations of chronic states there exists more or less hypersensitiveness in the tissues adjacent to those segments of the cord corresponding to the areas in which there is disturbed innervation. Alterations are found also to an even greater extent in the muscle fibers, due to infiltration, thickening, etc., producing a cord-like condition which slips back and forth under the palpating fingers in a manner resembling tendons or strands of muscle in tension. In places also the structures will occasionally be found to have lost tone to such an extent as to feel like dough, or, through atrophy, may seem absent. In acute conditions, like catarrhal disorders of the mucous membrane of the head, stomach, intestines, bronchi or of the genito-urinary cycle, the tenderness is often marked in certain definite regions disappearing promptly as recovery follows. During the progress of pneumonia and bronchitis the tenderness is rather less but the infiltrations are perhaps greater. In acute disorders of the genito-urinary organs moderate tenderness is observed over the lumbar areas and especially over the sacral nerves.

These sensory phenomena are less common in children than in adults if pain is a feature of the malady. Gentle pressure over the tender spot, at first disagreeable, soon produces relief and is welcomed; in some states relieving the pain or discomforts markedly and promptly. So in acute disturbances of the throat, nose and larynx, in addition to the sensory disturbances, changes in resistance in the upper dorsal areas are noticable as well as in the muscles of the neck. Personally I am not confident enough of my observations as yet to specify the precise significance of all the changes noted because there is much individual skill required to differentiate or interpret findings, but have already derived much practical information by this means, and as my skill grows I regard it with increasing favor.

To make use of this method of diagnosis requires a systematic reading of clinical facts in the light of broad physiological principles. Since few students are adequately grounded in this, it requires a readjustment of knowledge and careful study of the border land of physiology and pathology.

In a personal communication Dr. Chase Lester Leonard has given a résumé of the diagnosis possibilities of the Roentgen rays in disease in childhood.

The Roentgen rays have found many valuable applications in the diagnosis of children's disease. The skiagraphic method is, of course, more accurate than the fluoroscope, since it introduces less of the personal equation. The fluoroscopic method is practically adapted to the examination of children as they are more readily agitated. It, however, finds its greatest value in detecting abnormal movements, or absence of movements, such as restrictions of respiratory action in the diaphragm. This restriction in motion is seen where the normal capacity of the lung is altered either by congestion, consolidation, abscess or pleuritic effusion. It also determines their location as the darkened area contracts sharply with the normal lung, which is less opaque, and alters with inspiratory movements when the greater mass of air makes it appear more translucent. The more accurate detail afforded by the skiagraph is essential in locating accurately abscesses in the lungs and circumscribed pleuritic effusions. It also affords a better idea of cardiac enlargement. In purely medical conditions the results are a marked addition to our method of making a diagnosis. In surgery it affords more accurate diagnosis than can be obtained by other means. Thus the exact extent and character of congenital bone defects, or malformations, is determined and they are differentiated from pathological processes, as coxa vara are easily differentiated from simple congenital dislocations.

The contrasts afforded between diastasis, dislocations and fractures are also of greater utility. The ability to detect renal, ureteral and vesical calculi is a marked advance in precise diagnosis. The exact size and position of the calculus can be thus determined without passing a sound or subjecting the patient to any chance of infection. These calculi can in this way be detected as soon as a suspicion points to them and before they have done irreparable injury and before the symptoms have become so marked as to be otherwise readily determined.

SYMMETRICAL ENLARGEMENT OF PAROTID AND LACRIMAL GLANDS—NODULAR IRITIS.[1]

BY COLMAN W. CUTLER, M.D.,
OF NEW YORK.

THIS case is offered as an example of a very rare condition, and in conjunction with the deposits in the iris, it is believed to be unique:

Case.—October 11, 1903: Sophie Ferguson, colored, age twenty years, cook and laundress. Her home is near Norfolk, Virginia, but she has lived for more than a year near New York. General health has always been good, no severe illnesses, no history of malaria or of pulmonary diseases, nor of syphilis. The family history is negative.

For about one year she has noticed a swelling in front of both ears which for six months or more has seemed to her to be unchanged in size. It has always been painless. The swelling of the lacrimal glands has attracted her attention recently. About four months ago she noticed that the right eye was irritable; it was not painful or bloodshot, but there has been occasional neuralgic pain in the temples, especially of the right side. Vision in the right eye has failed.

Examination.—Both parotid glands are enlarged, with even, smooth surface and firm consistency. Not tender on pressure, and the skin is freely movable over them. Their dimensions are:

Right parotid: Greatest anterior posterior.9 cm.
Greatest vertical .....7 cm.
Left parotid: Greatest anterior posterior..5 cm.
Greatest vertical .....7 cm.

The protrusion of the glands is very noticeable. Both lacrimal glands are palpable below the orbital margin, filling upper and outer thirds of lids nearly to outer canthus. They are firm, lobulated, rather uneven masses. The submaxillery glands are somewhat enlarged. Cervical, epitrochlear, preauricular and inguinal glands are just palpable. Mouth is normal, mucous membrane pale. Liver and spleen not enlarged, ovaries apparently normal. Mammary glands normal. Examination of lungs is negative.

Examination of eyes.—Conjunctivæ normal. O.D. slight ciliary injection, cornea rather dull with surface slightly roughened, with a very fine granular appearence of the stroma. Numerous small precipitates on Descemet's membrane. At the angle of anterior chamber are six or seven nodules smaller than the head of a pin, of yellowish or pale pink color. Some of these nodules have a fine vessel winding around or over them They are arranged close together, and to some extent are confluent. Several very small white points protrude from the surface of iris, but otherwise its stroma appears normal, brown, with markings possibly a little blurred. Several fine posterior synechiæ. Tn. Lens clear, vitreous, hazy. Fundus not seen.

[1] Read at Academy Ophthalmological Society, July 14, 1904.

O.S. Cornea, fewer precipitates, no synechiæ, Iris, vitreous and fundus normal.

Vision O.D., 20/200; O.S., 20/30.

Urine: Normal.

Blood examination, October 29, 1903, by Dr. J. T. Gorton: Hemoglobin, 9 per cent.; red cells, 4,352,000; white cells, 5,200.

Differential count—

	Per Cent.
Polynuclear neutrophiles	59
Large lymphocytes	15
Small lymphocytes	22
Eosinophiles	0
Basophiles (mast cells)	2.7
Transitional forms	1.0

Blood examination, November 23, by Dr. F. C. Wood: Hemoglobin, 70 per cent.; red cells, 4,730,000; white cells, 5,900.

Differential count—

	Per Cent.
Polynuclear neutrophiles	65
Large lymphocytes	18.5
Small lymphocytes	7.5
Eosinophiles	3.0
Basophiles (mast cells)	1.5
Transitional neutrophiles	4.0

Dr. Wood writes: The result of the blood examination is entirely negative, except for a slight anemia. The proportions between the leucocytes are quite within normal limits."

The patient remained under observation for two months; during this time the parotid tumors became a little smaller, the lacrimal glands remained the same. The iris in the right eye showed slight changes from time to time, the tumors in the angle becoming larger, and the protrusions from the surface more numerous; the white dots on the dark iris presented a very striking appearance. In the left eye, several small nodules appeared in the angle of the anterior chamber, and although no white points were visible in the surface of the iris, there were several places where the tissue protruded as if nodules might appear.

The treatment was at first iodide and mercury in increasing doses, then arsenic, increased to 15 drops of Pearsons's solution, and maintained at that until the limit of tolerance was reached, and finally pilocarpine given in full doses. The parotids, and the eyes for briefer periods, were exposed to the X-rays, but without noticeable improvement. During the administration of iodide and mercury the condition of the iris grew steadily worse, the exudates on D's membrane more numerous, and also the protrusions from surface of iris. Under large doses of arsenic the condition appeared to improve somewhat, and she was advised to continue that treatment after her return to her home. Dr. B. R. Kennon, of Norfolk, very kindly examined the patient July 13, 1904, and writes as follows: "The small projections on the iris are very few in number, but both irides are bound to the lens by many points of adhesion. The cloudiness in the cornea I cannot make out to be confined

to Descemet's membrane, but seems to be in the stroma as well. She states that the parotid glandular enlargement has markedly decreased, and now there is but slight enlargement there. I cannot make out any lacrimal glandular enlargement."

It will be well to consider first the symmetrical enlargement of the parotids and lacrimal glands. This condition was first recognized as a disease by Mikulicz in 1888 in the *Berliner klinische Wochenschrift,* and more fully described in Billroth's Festschrift in 1892. In this case, also, the blood was normal, the spleen and lymph glands not enlarged. The disease made itself manifest by symmetrical swelling of parotids, submaxillary and lacrimal glands. There was in addition glandular swelling in the roof of the mouth. About two-thirds of the tissue of the swollen lacrimal glands was removed, as they were the cause of the greatest annoyance to the patient, but the tumors returned in a short time. A second time a more radical removal was made, and until death from appendicitis, three months later, there had apparently been no return. The microscopical examination showed that the tumors were composed almost entirely of small round cells among which the acini of the glands were intact. Histologically, they might be lymphoma or lymphosarcoma. If the former, one would expect enlargement of the other glands or of the spleen, and the latter would certainly show a more malignant character.

In 1889 Haltenhoff and in 1891 Fuchs each reported a similar case. In that of Fuchs the portion removed was composed of lymphoid tissue. It remained practically unchanged in spite of arsenic, which was not well borne, during a period of fourteen months. In Haltenhoff's case the tumors disappeared spontaneously or with syrup of the iodide or iron, in less than a year. Fuchs saw two other cases in all respects like the first of Mikulicz, but less pronounced. The tumors diminished after the continued use of arsenic for months. These are mentioned by Mikulicz but, so far as I know, have not been reported in detail.

In a paper by Kümmel (*Mitteilungen aus dem Grenzgebiete der Medicin und Chirurgie,* 2, 1897) 21 cases are listed which correspond in some respects to these. If we exclude those with leucemia and those in which the lymphatic glands are generally enlarged, there remain 14 cases in which parotids or lacrimal glands were swollen, and in seven cases both parotid and lacrimal glands were involved. The prognosis has been favorable. The tumors disappear, as a rule, in from a few months to two years under treatment with iodide or arsenic. After complete extirpation they have not tended to return. With regard to this fact Kümmel and Axenfeld made the following observation:

"The absence of relapses after complete removal of the glands is important in separating this disease from lymphosarcoma and pseudoleucemia, in both of which diseases relapses are to be expected."

Since in our case there has been no examination possible of the tumors, it is not easy to classify it, but clinically it corresponds to the cases of Mikulicz and Kümmel rather than to that of Axenfeld (*v. Graefe's Archiv,* Bd. 37) and others where there have been lymphomata in the orbit, and in the most varied localities. The assumption is that in such cases the exciting agent has been brought by the blood or lymph channels, while in the cases in which the growths have been limited to the parotids and lacrimal glands, the access to the glands has been through the ducts, from the mouth and conjunctiva; this is probable in a recent case reported by Baas (*Zeitschrift für Augenheilkunde,* September, 1903).

In our case, however, there is the limitation of the new tissue to the parotid, submaxillary and lacrimal glands, but in addition a uveitis of so unusual a form that the diagnosis cannot be made with confidence.

Such a uveitis, however, is of endogenous origin, syphilitic, tuberculous, lymphoid or from some infection not at present to be classified.

Millée and Vidaur (*Le Progrès Médical,* Tome 16, October 25, 1902) report a case of double dacryoadenitis with double iritis: Male, aged forty-two years, woodcutter. The patient complained of a firm, movable, painless swelling in the upper outer part of both orbits, noticed ten days before he was first seen by the authors. Eight days later an acute attack of iritis occurred with numerous synechiæ and two little "papules, reddish yellow in color, size, the head of a pin in the lesser circle of the iris." There was also a papular eruption of the skin. These symptoms responded promptly to vigorous antisyphilitic treatment. This case is interesting only because it combines the lesion of the lacrimal glands with iritis, but the etiology puts it in a different category as our case was of a chronic, indolent nature, and, moreover, it grew worse under antisyphilitic treatment.

The literature of tuberculous iritis is very extensive. Leber has described cases under the title of "Attenuated Tuberculosis of the Eye" (Bericht der ophthal. Gesellschaft, Heidelberg, 1891), which are striking in their fluctuations and tendency to spontaneous disappearance, and which, clinically, must have resembled the present case in many respects. Also, the appearance of the iris in our case is not unlike some cases of inoculation tuberculosis.

Stieren (*Johns Hopkins Hospital Bulletin,* November, 1901) reports a case of dacryoadenitis and conjunctivitis with general tuberculosis, and gives a review of the contributions to that phase of the subject.

Gallasch (*Jahrbuch für Kinderheilkunde,* Neue Folge, VII Band, 1874, p. 87) reports a case of a leucemic child with, among many other symptoms of leucemia, extreme enlargement of tear

glands and parotids. It is interesting to note that the microscopical appearance of the glands was strikingly similar to that of the case described by Mikulicz and others, in which there was no suspicion of leucemia.

Shoemaker (*Annals of Ophthalmology*, July, 1904) reports a case of bilateral enlargement of the lacrimal glands, with a discussion of the nature of that and related conditions.

Michel, in 1881 (*v. Graefe's Archiv*, Bd. 27, 11, p. 256), described and depicted most clearly, a case of pseudoleucemia which seems to have a striking similarity, as regards the appearance of the iris, to that under discussion. Michel considered the tumors in the iris to be lymphomata in a late stage of the disease, because of the fibrous character of the cells, combined with the new lymphoid tissue.

If the symmetrical enlargement of the glands and the uveitis are to be brought into the same category, we are justified, in view of Michel's case, in considering them both as a manifestation of lymphoid activity, due to some unknown agent circulating in the blood.

Häckel (*Archiv für klinische Chirurgie*, Band 69, p. 191) describes an interesting case in which the patient who had suffered a severe injury to the kidney, to which, however, no etiological significance is given, developed a severe enteritis, associated with symmetrical enlargement of the parotids and lacrimal glands. Häckel classes these latter conditions together.

It is obvious that the symmetrical swelling of the tear glands and parotids occurs in a group of cases by itself as an idiopathic condition, and it is believed by Mikulicz and Häckel that this group is an infectious disease in the broadest sense of the term, although no organisms have been found by the most careful search in the glands or blood.

In another group the same symmetrical enlargement occurs in conjunction with leucemia and pseudoleucemia, and the modern tendency is to attribute these diseases, also, to a bacterial origin.

In our case the iritis is an additional, and it would seem, a conclusive argument in favor of the bacterial origin of the disease, whether we classify the condition as pseudoleucemia or not, which is, after all, a mere clinical way of begging the question.

The tendency of our case seems to be toward recovery, as is shown by Dr. Kennon's recent report, already quoted. The limitation of the lymphoid tissue to parotids and lacrimal with a relatively good prognosis, points to an essential disease in which the growths are influenced by the functional activity of these organs, as in mumps, or else the result of infection, as is suggested by Mikulicz and Häckel, and to this view the iritis with its sluggish course, and fluctuations coinciding with those of the glands lends the strongest possible confirmatory evidence.

OVERLAPPING THE APONEUROSES IN THE CLOSURE OF WOUNDS OF THE ABDOMINAL WALL.[1]

BY CHARLES P. NOBLE, M.D.,
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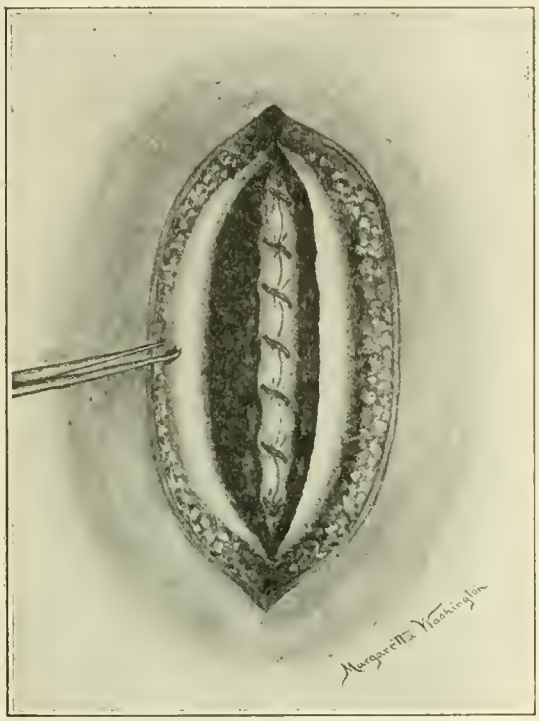
It is my desire to bring to the attention of the Society the importance of overlapping the aponeuroses in the closure of all wounds of the abdominal wall, no matter what the location of the particular wound may be. The principle is equally applicable to incisions in or near the median line, to lateral incisions whether made for operations upon the stomach or gall-ducts, or for operations for appendicitis, or for incisions in the groin, whether these are made in the operation for shortening the round ligaments or for the cure of hernia. This principle I first applied in operating for an umbilical hernia April 7, 1894, and since January, 1897, it has been applied as a routine practice in the closure of all wounds of the abdominal wall, no matter what their nature.

It is now a generally received principle that the proper closure of incisions in the abdominal wall involves the union of homologous structures, and it is almost as generally accepted that this is best secured by the employment of the tier or étage suture. There are still surgeons who claim that equally as good results can be obtained by means of the through and through suture, but the claims of these are contrary both to the theoretical considerations involved and to the general experience of the profession. While the object of the suturing of incisions is to bring the homologous structures of the wound in apposition and to restore the abdominal wall to its original anatomical relations, it is nevertheless true that from the standpoint of the prevention of hernia the most important point is to secure firm union of the aponeuroses; because the strength of the abdominal wall, from the standpoint of resisting intra-abdominal pressure depends more upon the integrity of the aponeuroses and fasciæ than upon the union of the other structures involved. This proposition is so generally admitted that it is unnecessary to adduce evidence in its support. The problem then is as to the best manner of suturing the aponeuroses to insure firm union of these structures. The usual method advised is to suture these structures either with a running or interrupted suture so as to bring the cut edges in apposition, as is done with the peritoneum, muscle, fat and skin, and this method has given admirable practical results. When it is recalled, however, that the aponeuroses of the transverse muscles are quite thin (about a line in thickness), it becomes evident that the cicatricial union of these edges when merely brought in apposition will be weaker than were the aponeuroses before their division. Impressed by the fact, or what I believe to be a fact, since 1897 it has been my

[1] Read before the Pennsylvania State Medical Society, September 28, 1904.

practice to overlap the fasciæ from one-third to one-half inch as a routine method, and the results secured in the prevention of hernia have been such as to convince me that this method of closing the abdominal wall insures a firmer union and a more certain safeguard against the development of hernia than any other method in use. Since 1897 there have been approximately eleven hundred and fifty wounds in the abdominal wall closed by this method, and of this

Fig. 1.



Closing the Abdominal Wound.

number only three cases of hernia are known to have occurred. There has been no case of hernia among the Alexander operations. The method has been used in the closure of the ordinary incisions of the abdominal wall, for the closure of incisions of the inguinal canal when opened to shorten the round ligaments, in all operations for the cure of hernia, whether umbilical, inguinal of ventral (postoperative), and for the cure of diastasis of the recti muscles, demonstrating what I have previously claimed for it ("A New Method of Suturing the Abdominal wall in Celiotomy," *Amer. Jour. Obst.*, 1897, vol. xxxv, No. 4; "Shall Absorbable or Non-absorbable Ligatures and Sutures be employed in Hysterectomy and Salpingo-oophorectomy?" Medical News, October 15, 1898; "Alexander's Operation," *Amer. Gynæc. and Obst. Jour.*, May, 1899; "Remarks on the Influence of Technic upon the Results of Closure of Wounds of the Abdominal Wall," *Boston Med. and Surg. Jour.*, March 8, 1900), that it is of universal application.

I have in preparation a historical paper dealing with the development of the method, showing how different surgeons have used the principle in particular operations, more especially for the cure of inguinal hernia. It is not my intention to dwell upon this phase of the subject at this time, but merely to insist upon the general applicability of the principle, and upon its value in the closure of all wounds of the abdominal wall.

In practice the use of the method is quite simple. The incision in the hypogastrium for operation on the female pelvic organs may be taken as the type. This incision is made by choice through the inner border of the right rectus muscle. In closing the wound, the peritoneum is first closed with a continuous suture of fine cumol catgut. The fat is then dissected from the upper surface of the aponeurosis of the transverse muscles on the left side of the wound from one-third to one-half inch. The aponeurosis upon the right side of the wound is then separated for an equal distance from the rectus mus-

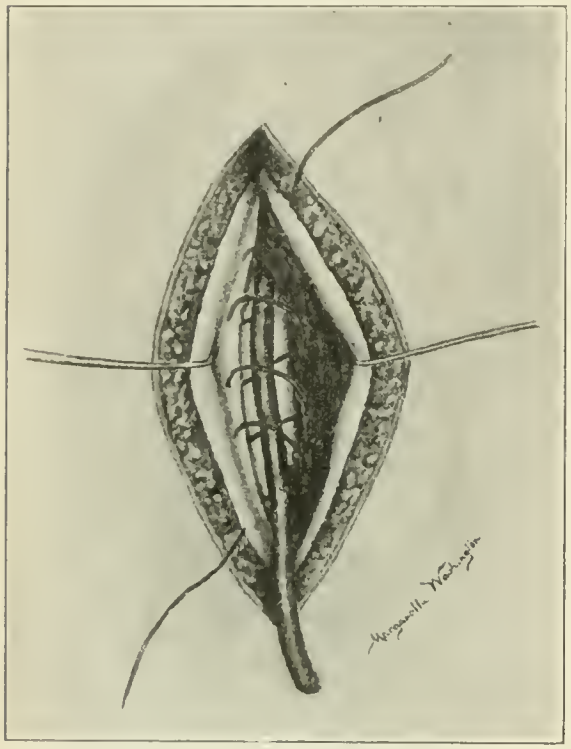
Fig. 2.

Closure of the wound in the aponeurosis of the oblique muscles. Overlapping the aponeurosis by superimposing that of the right side of the wound upon that of the left, and suturing with a continuous chromicized catgut suture.

cle. The muscles and fasciæ are then sutured by means of a medium weight chromicized catgut suture in the following manner: The suturing is begun at the lower angle of the wound upon the left side. The suture is passed from above downward through the aponeurosis and rectus muscle. Then the separated bundles of the rectus muscle are united with a continuous suture until the upper angle of the wound is

reached, when the suture is passed from below upward through the aponeurosis upon the left side of the wound. The suture is then passed from below upward through the aponeurosis upon the right side of the wound, and an additional suture is taken above this point to fix the suture and take the strain off that part which has brought the muscle in apposition. The aponeurosis is then closed from above downward by catching the aponeurosis upon the left side of the

Fig. 3.



Shortening the Round Ligaments.
Suturing the internal oblique round ligament and Poupart's ligament with chromicized catgut—to fasten the ligament and obliterate the canal.

wound after the manner of the Lembert intestinal suture, and then passing the needle from below upward through the aponeurosis upon the right side of the wound. When this suture is drawn taut, it slides the aponeurosis of the right side of the wound upon that of the left side and holds the two in apposition; the amount of overlapping depending upon the distance from the edge at which the needle is passed through the aponeurosis upon the left side of the wound. The process is repeated until the lower angle is reached, when the two ends of the suture are tied. In long wounds two or more mattress sutures are placed to take tension off the lines of continuous suture. The fat is closed with a continuous suture of fine cumol catgut. The skin is closed with fine cumol catgut suture by the intracuticular method. When median wounds are long, extending near or above the umbilicus, care is taken to unite the posterior aponeurotic sheath of the rectus muscle with the peritoneum. For this purpose frequently a fine chromicized catgut suture is used. This principle is followed also in wounds through the upper portion of the rectus muscle and in wounds of the rectus muscle in operating for appendicitis, in order to secure firm union of the posterior sheath of the rectus.

In operations in the groin, whether for shortening the round ligaments or for the radical cure of inguinal hernia, the internal oblique muscle and any convenient aponeurotic tissue is sutured to Poupart's ligament with chromicized catgut, care being taken to begin the line of suture at or above the upper border of the internal ring. The incision in the aponeurosis of the external oblique

Fig. 4.

Overlapping the aponeurosis of the external oblique in closing the inguinal canal.

is then closed by overlapping the aponeurosis to the outer side of the wound upon that to the inner side of the wound.

University of Pennsylvania.—Mrs. Samuel Dickson has donated $25,000 to the University, half to be devoted to the University Christian Association, the other half to the children's orthopedic ward in the hospital. The new gymnasium of the University was dedicated, December 14, in the presence of numerous alumni and guests. It is said to be the finest of its kind in the country, the cost when completed being $1,000,000. A system of compulsory physical exercise has been instituted under the direction of Dr. R. Tait McKenzie.

THE ASSOCIATION OF CANCER AND TUBERCULOSIS.

BY W. A. BASTEDO, PH.G., M.D.
OF NEW YORK.

Like some other dogmas of medical science, it has long been taught that cancer and tuberculosis are mutually antagonistic. Sidney Martin recalls seeing only two cases of the association, and the Fenwicks write: "Most authorities are agreed that the two complaints rarely coexist in the active state." In a fair-sized audience of medical men, McCaskey was unable to find one who had seen the association. On the other hand, Moak maintains that there is no antagonism, and Claude, who made an extensive study of the subject, concluded that either might be favorable to the development of the other.

We had two of these cases at St. Luke's Hospital, New York, and I have to thank Drs. C. F. Collins, Egbert LeFevre and F. C. Wood for permission to use the case histories and post-mortem records. In the subsequent review of reported cases, only those are considered which have been verified histologically or about the correctness of which there seems no reasonable doubt. Many of the older cases have been omitted, as for example, that of Annan of pulmonary phthisis, with carcinomatous ulcers in the bowel; in the absence of histological examination these ulcers may have been tuberculous. A case of Kidd's with tumor of the lung and cavity formation has been claimed as an example of mutual tolerance, though Kidd expressly states that the lung showed no tubercle tissue and no tubercle bacilli. Our cases were:

Case I.—D., male, aged forty years, married, boxmaker, entered hospital November 12, 1899, and died three months later. Family history uncertain. Ten months before admission began to cough, had pain in anterior chest and night-sweats. Since then has had several fair-sized hemoptyses. On admission the physical signs were those of miliary tuberculosis of both lungs, and tubercle bacilli were found in the sputum. On December 26, he complained of pain in back and left mammary region, and a tender prominence was noted over fourth spinous process. It was taken for a kyphos, the mammary pain being attributed to pressure on the nerves, but no pain was elicited on jarring the body or on crowding down the ribs. On January 12, leucocytes 18,200. On February 13 a tumor 5 x 5 cm., rounded elastic in center and hard at periphery, was felt on the liver surface immediately below the ensiform process; to the right of this were felt a few small nodules. He died two days later. The temperature on admission was of the steeple variety, ranging from 98.4° to 103.2° F. The excursion gradually became less, and from December 26, the day on which the lump on the back was first noticed, until he died, fifty days later, the temperature rose above 100 only seven times, and was practially the same in the morning as in the afternoon.

Post mortem.—Right lung.—Dense adhesions, middle and lower lobes completely converted into a large cavity which is nearly filled with thin pus. At the hilus of the lung is a tumor about the size of a lemon, and included in its mass are swollen and pigmented lymphnodes. *Liver.*—On anterior surface left lobe is a large cancer, hard externally and soft in the center; scattered through the liver substance are a number of smaller tumors. *Pancreas.*—In the head is a neoplasm of 2 cm. diameter; midway between head and tail are two smaller nodules. *Stomach.*—One small nodule beneath mucous membrane. Spleen, both kidneys and left suprarenal show metastatic nodules, and there are many such along the whole vertebral column and under the costal pleura along the ribs. There is one large nodule surrounding the fourth spinous process. Intestine and brain normal. The histological report is not accessible.

Case II.—H., male, aged thirty-nine years, mining engineer, born in Sweden, has traveled much in Africa and South America. Entered November 2, 1899, and died two years later. Father died of inflammation of the lungs; no other family history obtained. Patient had had pneumonia, yellow fever, bilious intermittent fever, and several attacks of hemorrhagic malarial fever with bloody urine and stools. Eight months ago he noticed loss of flesh and strength, cough, blood-streaked expectoration and occasional night-sweats. At the Presbyterian Hospital tubercle bacilli were found, and they were also present when he entered St. Luke's, but though often sought, they were not again found during his first stay of eight months in the hospital. His lesion seemed quiescent, the physical signs being those of emphysema and fibrosis in the right lung, with chronic bronchitis and adherent pleura of both sides. The abdominal veins to the right of the umbilicus were notably enlarged; spleen and liver not felt. He had frequent asthmatic attacks. During this stay of eight months he had frequent hemorrhages from the bowels with diarrhea. The blood was mostly dark, and sometimes continued to show itself in the stools for a week or more, the patient becoming very feeble and anemic. Some stools were pure blood. Preceding the hemorrhage there was much pain in the liver region, but it seemed to vanish on the appearance of the blood. He occasionally had cramps in the abdomen, and for one period of several days had either a chill or chilly feeling each day. The blood showed no plasmodium nor noteworthy changes in size or shape of the red cells. Rectal examination was negative though later he developed hemorrhoids. A species of *Anguillula* was found in the mucus which coated his stool when formed, but we were unable to determine whether it was true *Anguillula stercoralis* or one of the numerous species from our ordinary fresh-water streams.

In July, 1900, he left the hospital, weighing 154 pounds and having lost 19 pounds in eight

months. His cough was slight, there was no sputum, and his loss in weight was attributed to his frequent hemorrhages. These were supposed to be due to cirrhotic liver. A year later, September 12, 1901, he returned weighing 120 pounds, and five weeks later died. On admission there were marked signs of tuberculosis in both lungs and many tubercle bacilli in the sputum. Liver and spleen not felt. On October 3, liver just palpable, spleen negative. On October 15, the blunt edge of the liver was felt in the median line two inches above the umbilicus; just to right of midline was a horizontal, hard, ridge-like, oval, tender lump. Spleen negative. He died two days later. From admission until death, five weeks, he had frequent shaking chills and abdominal pain. The diazo test of the urine was repeatedly negative, but on October 10 reacted weakly and on October 17, the day of death, was clearly positive. The blood on October 4 showed 3,392,000 red cells, 45 per cent. of hemoglobin, and of the leucocytes 85 per cent. were polymorphonuclear.

It is noteworthy that, although he had repeated chills and rapid respiration with cough and profuse expectoration, his temperature after October 2, the day before his liver was first felt, never rose above 99° F., and tended to be subnormal. Twice it reached 94°, three times 95°, and once 96° F.

Post-mortem.—Right lung—Dense pleuritic adhesions, two cavities, diffuse consolidation with areas of cheesy degeneration and miliary tubercles throughout. *Left lung*—Pleuritic adhesions, one small antrum and scattered miliary tubercles. *Liver*—Near anterior border right lobe was rounded eminence, 15 x 10 x 6 cm., which on section is a new growth broken down in center and containing clear viscid fluid. Several small tumors are scattered through the enlarged liver. Near the head of the pancreas is a large, very hard lymph-node. There is chronic colitis, and in the region of the sigmoid flexure are many small ulcers about 1 cm. or less in diameter, and some old ulcer cicatrices.

Histological examination.—Lungs—Tuberculous tissue with giant-cells, large areas of cheesy degeneration, some of which are wholly encapsulated; much connective tissue. *Liver*—Infiltration of lobules with carcinoma cells, considerable stroma between lobules. The ducts and blood-vessels are surrounded by cancer cells. The lymph-node from near pancreas is cancerous.

This then would seem to be a case of pulmonary tuberculosis with chronic ulcerative colitis and cancerous cirrhotic liver. It may be that the liver pain and hemorrhages two years before death were due to a simple cirrhosis, or the cancer may have already begun to involve the liver and hepatic vessels. Might not the cancer have developed in a liver already cirrhotic, as it sometimes does in other sclerosed or cicatrized tissues?

Both these cases had extensive tuberculous involvement of the lungs with cavity formation, yet for some time preceding death the temperature was nearly normal and not at all septic or tuberculous, and the patients seemed to die as from cancer rather than from tuberculosis.

Of the reported cases of association where *the two processes were active but did not involve the same tissue* the tuberculosis was mostly in the lungs, intestine and lymph-nodes. Rarer were Pott's disease, tuberculous pericarditis, tuberculous meningitis, fistula in ano and tuberculous knee. The site of the cancer was: *Breast* 10 times (Cases of Majer, Clement and Williams 8 cases; *uterus* 10 times (Briggs, Middlesex Hospital, Oppolzer, Williams 7 cases); *cheek* once (Middlesex Hospital); *lower jaw* once (Clement); *upper jaw* once (Middlesex Hospital); *tongue* once (Middlesex Hospital); *pharynx* once (Meunier); *larynx* once (Middlesex Hospital); *œsophagus* 13 times (Béhier and Gallard, Middlesex Hospital, Parmentier, Peter, and Porcharies 9 cases); *stomach* 39 times (Béhier, 5 of Boas, Clement, 2 of Fenwick, Gouin, Kollick, 2 of Metterhausen, Middlesex Hospital, Moutard-Martin, 12 of Mouisset, Osler and McCrae, Pauli, Peter, Pierazzini, 8 of Schräder); *liver* 8 times (Béhier, Fenwick, McCaskey, 3 of Mouisset, Picot, Pierazzini, our case No. 1); *pancreas* 3 times (Fenwick, McCaskey, our case No. 2); *intestine* 4 times (Fontoynont, Forster, Lubarsch, Metterhausen).

Pauli had a case of gastric cancer with tuberculous pericarditis. Metterhausen had one of pyloric cancer with tuberculosis of the neighboring lymph-nodes; and one of pyloric cancer with miliary tuberculosis of the liver and mesenteric lymph-nodes. Clement had three cases, (1) cancer of lower jaw with tuberculous cervical lymph-nodes, (2) cancer of right breast with tuberculosis of right axillary lymph-nodes, (3) cancer of stomach, with tuberculosis of liver, lymph-nodes of the gastrohepatic omentum, and axillary lymph-nodes; no trace of cancer was found in any of these lymph-nodes. The Fenwicks relate a case of hemoptysis, recent pleurisy and extensive tuberculosis of right lung, with latent carcinoma of the posterior wall of the stomach and metastases in the liver and the lymph-nodes above the pancreas. Meunier's case died from a tuberculous bronchopneumonia following gastrotomy for inoperable pharyngeal epithelioma. In Béhier and Gallard's case, an œsophago-pulmonary communication was formed by ulceration of an œsophageal cancer on the one side and the softening of tubercle on the other. Lubarsch had a caseous peribronchitis with six cancerous nodules in the ileum (verified histologically). Fontoynont had a case of tuberculosis caries of the spine with cylindrical epithelioma of the transverse colon. Forster reports pulmonary tuberculosis with cancer of colon, and Porchaire cancer of œsophagus with tuberculosis of testicle. Of Williams 130 clinical cases of breast cancer, five had phthisis, two fistula in ano, and one lupus vulgaris. Of his 130 uterine cancers

five had phthisis, one fistula in ano, and one a tuberculous knee. In all these cases the tuberculous lesions were active and existed independently of the carcinomatous.

But there are a number of cases where *both affections attack the same tissue or organ, i.e.,* presumably either process attacks a tissue or organ in which the other has already gained a foothold. Among the cases in which the tuberculosis is the antecedent lesion, the most familiar are those of lupus vulgaris upon which epithelioma ta have developed. Fordyce writes: "Carcinomata develop from active lupus or from its scar-tissue so frequently as to indicate more than an accidental relationship." Garres described a lupus of the larynx in which, aside from pronounced tuberculosis, he noted epithelial proliferation into the submucosa, and epithelial pearls. Beausoleil had a similar laryngeal case. In 118 cases of lupus vulgaris, DuBois-Havenith found five epitheliomata. Desbonnets was able to find 90 reported cases of the double lesion, and writes "It does not differ from epithelioma on ordinary skin." Ashihara, however, claims that it does differ from ordinary skin cancer, as it occurs at a comparatively early age, advances rapidly, rarely forms metastases, and often recurs after removal. Anderson writes in Allbutt's System: "It is especially malignant and may show itself at an unusually early age." Of Steinhauser's 83 cases, 24 per cent. were under forty years of age. On the other hand, Desbonnets claims that when the epithelioma appears the lupus has existed on the average thirty years before the epithelioma developed: Hallopeau and Leredde say forty years. C. W. Allen showed a case in which a lupus of twenty-four years had in six months developed an epithelioma involving half the forehead. Stelwagon speaks of a long-standing lupus which became epitheliomatous and ran a rapid and malignant course. The opinion among dermatologists is, therefore, that *lupus* is in some way *favorable to the development of epithelioma.*

According to Ziegler, "in lupus tissues the epithelial cells are in part subjected to altered conditions of nutrition, and in part are displaced, so that they are often lodged among the deeper layers of the tissues." He attributed the epithelial proliferation to ulceration and the formation of cicatrices. In Tillmann's Surgery we find "in lupus the epithelium often grows into the subcutaneous cellular tissue in the form of irregular epithelial proliferation. This explains the fact, perhaps, that persons afflicted with lupus not infrequently develop epithelioma." Crouzon notes that in lupus there exist various benign new growths of irritative origin. Hallopeau and Leredde say, "In old lupus, treated, sclerosed, cicatrized, there tend to form epithelial inclusions." Much more has been written on the subject than we have indicated, and the concurrence of opinion is, that lupus tissue is subject to abnormal epithelial proliferation.

Does the epithelioma merely develop as in scar-tissue, or is the tuberculosis an important factor? Fordyce says: "Growths may arise in indifferent scar-tissue but in lupus the course is more rapid." Leloir believes that a cicatrix is necessary. Lang, Raymond, Mibelli think scar-tissue unnecessary. Bidault suggests an origin in the sebaceous glands. Claude finds that cancer may develop in a cicatrized or in an active lupus, but that even in this latter there may be cicatricial areas. Crouzon says, "It may develop on an ulcerated lupus, but is more frequent where not ulcerated." According to Anderson, "In most cases the cancer first attacks the spreading edge of the lupus, but in a considerable number it originates in the cicatrix." Desbonnets found the development in the cicatricial area only 21 times in 90 cases. Fordyce writes: "In lupus there is nearly always active tuberculous disease, and thus less resistance offered to the epithelial growth," and again: "In lupus a constant irritation is exerted on the epithelial layer, which causes it to undergo hypertrophy, and ultimately may lead to its becoming the seat of a malignant growth."

Cancer certainly has a tendency to develop at the site of any long-standing irritation, as in epithelioma of lip, cancer arising from ulcer of the stomach, and cancer of the uterus in old laceration of the cervix.

It seems certain, then, that scar-tissue and irritative lesions are distinct factors in the production of epithelioma, and it is probable that the combination of scar-tissue with tuberculous disease makes a double preparation for the neoplastic growth, the tuberculous process being both an irritative lesion and one that tends to enfeeble the resistance. Other similar chronic inflammatory conditions of the skin do not rank with lupus in epitheliomatous transformation, for in syphilis there are comparatively few reported cases, and in lupus erythematosus we could find only four cases in the literature. It may be that the very long course and repeated cicatrizations of lupus vulgaris place it in a class by itself, for certainly syphilitic lesions do not persist thirty or forty years. It is well to note also that Roger Williams and also the Fenwicks mention the rarity of a syphilitic history in those patients suffering with cancer.

Of cases other than lupus in which tuberculosis and cancer involve the same tissue or organ, we shall only here and there attempt to indicate which is the prior lesion. The following are the reported cases: Involving the breast 7, uterus 1, larynx 2, lungs 20, esophagus 4, stomach 3, small intestine 3, large intestine 4, rectum 3, liver 1; also 2 cases of cancer only of the breast with the double lesion in the axillary lymphnodes, and Ribbert's eleven cases in which he failed to find tubercle bacilli, and made his diagnosis mainly on the presence of giant-cells. These cases were: 6 of lip, 1 each of mouth, tongue, gum, eyelid and penis; he claims to have excluded syphilis, leprosy, actinomyces, animal

parasites and foreign bodies as the cause of the giant-cells.[1]

Of special interest among these cases might be mentioned: Haug's case of tuberculous nodules on the lobe of the ear, among which epithelioma developed; Moak's five cases: one, the primary cancer in the prostate, and the tuberculosis in the lungs, and there were metastatic combinations of the two lesions in lungs, bronchial lymph-nodes, adrenal, liver and spleen; two, adenocarcinoma of sigmoid flexure, in which a tuberculous process was working its way between the intestinal wall and the fungoid edge of the neoplasm undermining the latter; the interior of the cancer alveoli were necrotic and cheesy and contained tubercle bacilli; there was combined metastasis in liver and kidney; three, recurrent carcinoma with tuberculosis, apparently primary, of the mammary gland, with the combined lesion also in the axilla; four and five, both cases of uncomplicated cancer of the breast with the double lesion in the axillary lymph-nodes. Crawford observed a scirrhous cancer in a chronic interstitial mastitis, which on account of caseating areas was supposed to be tuberculous, though neither giant-cells nor tubercle bacilli were found; in the axilla were a large caseating mass of tuberculous lymph-nodes, two single cancerous lymph-nodes, and between axilla and breast some lymph-nodes with tuberculosis and cancer side by side. Warthin found the combined lesion in the breast in two instances; in one of the cases the axillary lymph-nodes were examined and showed the double lesion. Kallenberger reports a woman who had pulmonary tuberculosis; the breast became inflamed and was found to contain tuberculous tissue surrounding, but sharply delimited, from, nests of cancer cells. Pilliet and Piatot briefly record a carcinoma of the breast in which was a fistula 6 cm. long; section showed both tuberculosis and cancer. From the larynx (vocal cord) Zenker removed an epithelioma, in the center and edges of which were tuberculous foci containing a few tubercle bacilli. Crone and Baumgarten extirpated the larynx for recurrent epithelioma, and cancer and tuberculosis were found intimately associated in this and in some large neck glands adjacent to a cutaneous cancer metastasis.

In the lungs, Friedländer, Menétrier, Schwalbe, and Wolf (2 cases) found cancer arising from the wall of a tuberculous cavity. All were flat-celled epitheliomata seated on sclerotic tissue, and supposedly arising from the alveolar epithelium. In studying primary cancer of the lung, Wolf observed the association in 13 cases, among which worthy of note are: One case with miliary carcinosis intermingled with miliary tuberculosis, one case with miliary carcinosis and a tuberculosis which was not miliary, and two cases of cancer in a tuberculous cavity. Lubarsch reports two cases, a primary lung cancer in pulmonary tuberculosis and metastatic cancer in fresh areas of tuberculous infiltration in the lung. Barth observed a tuberculous bronchopneumonia in a part of the lung whose main bronchus was obliterated by a primary cancer. Olmer reports tuberculosis of both lungs, liver and spleen, and in one lung a neoplasm which was either a tubular epithelial cancer or an alveolar sarcoma.

In the esophagus, Zenker discovered an epithelioma, the stroma of which and the adjacent esophageal tissue were tuberculous and showed tubercle bacilli. Cordua also reports a cancer of the esophagus invaded by Koch's bacillus. Pepper and Edsall had a case of tuberculous occlusion of the esophagus with partial cancerous infiltration. Weyeneth found cancer of the esophagus invaded by tuberculosis in a case with tuberculous cavities in the lungs. Béthier and Gallard's esophago-pulmonary fistula (see above) might also be mentioned here.

In the alimentary tract, Claude had a case with tuberculosis in lungs and large intestine, and a tumor of the stomach, of which about one-third had ulcerated away. The tumor was adenomatous in some parts and carcinomatous in others. Dense and caseating tubercle tissue had cut off the tumor's nutrition, with resulting necrosis, but nowhere did the tubercle tissue invade the substance of the cancer, though in immediate contact with the cancer cells. There were tubercle bacilli, giant-cells, and round-cell infiltration. According to Claude, "this was a tuberculous infection engrafted on a growing epithelioma and causing its partial destruction, the cancer having arisen from polypoid adenomata." Friedländer found tubercle tissue in a gastric cancer which had developed on the cicatrix of a simple ulcer. Lubarsch had a case with tuberculosis of lungs and mesenteric lymph-nodes, and tuberculous ulcers of trachea, ileum, ascending colon and rectum—with a carcinoma of the ileum producing stenosis. (The case of Jackson, 1848, involving the testicle, is not verified.)

From these cases it is evident that *not only may cancer and tuberculosis attack the same person*, but that *their lesions may lie side by side, or may intermingle, or that the one may develop in a tissue already the stronghold of the other.* Tuberculosis implies chronic inflammation and enfeebling of tissue-resistance; but that the malnutrition of tuberculosis favors cancerous growth cannot be postulated, for cancers develop in those of good nutrition as well as in the emaciated. On the other hand cancer may, by its effect on nutrition, favor tuberculous infection, or by changing the character of the epithelium, or by ulceration, may permit the entrance of the tuberculous germs. Or tuberculosis may develop in the neighborhood of a can-

[1] These cases were reported as follows: *Breast*—Crawford, Kallenberger, Koster, Moak, Pilliet and Piatot, Warthin (2); *Ear*—von Franque; *Larynx*—Crone and Baumgarten, Zenker; *Lungs*—Barth, Dittrich, Friedländer, Friedreich, Lubarsch (2), Menetrier, Olmer, Schwalbe, Wolf (2); *Esophagus*—Bethier and Gallard, Cordua, Pepper and Edsall, Weyeneth, Zenker; *Stomach*—Claude, Friedländer, Loewenstein; *Small Intestine*—Lubarsch, Naegeli, Weyeneth; *Colon*—Dalton, Metterhausen, Moak, Naegeli; *Rectum*—Baumgarten, Manjkowski, Naegeli; *Liver*—Dittrichs; *Lobe of Ear*—Haug. *Axillary Lymph Nodes*—Crawford, Moak (2).

cer, the resistance of the tissue being lowered by the influence of the neoplasm in the vicinity; or a latent tuberculosis in a lymph-node may become active when a cancer arises near by. The cancer may also act mechanically, as when it obstructs a bronchus or vessel, and tuberculosis appears in the stagnated and congested area thus produced.

Cancer and tuberculosis are certainly not antagonistic. Indeed they might more often involve the same structure, were it not that, as suggested by Rokitansky, 1838, the parts usually attacked by cancer are not those frequently invaded by tuberculosis. Williams, in 7,297 cases of primary cancer, found 80 per cent. located in superior maxilla, lower lip, mouth, tongue, esophagus, stomach, uterus, prostate, bladder, external genitals and breast, regions where tuberculosis is not common. In Reiche's 11,930 cancer cases the site of the neoplasm in 79 per cent. was esophagus, stomach, rectum, liver, gall-bladder, pancreas, bladder, uterus and breast. On the other hand, tuberculosis attacks mostly the lungs, serous membranes and small intestines, which are seldom the seat of cancer.

Aside from their occurrence in the same tissue we might also expect the two lesions in the same person more commonly, were it not that, as shown by Cruveilhier, 1828, the period of life for the greatest tuberculous activity is that at which cancer is comparatively rare, while active tuberculosis is less common at the later period of life, when cancer is in the ascendency. Muirhead states that in Great Britain the average age at death from cancer is about sixty years. Of 11,930 deaths from cancer Reiche found that 73.44 per cent. took place after fifty. On the other hand, of 10,649 deaths from pulmonary tuberculosis, Barié ascertained that only 17.8 per cent. occurred after fifty, and in 92,141 deaths at the age of sixty or over, only 2.3 per cent. were due to tuberculosis. Of Bariés 10,649 deaths from pulmonary tuberculosis, the semi-decades in which ten per cent. or more of the deaths took place were those between the ages of twenty and forty-five years, so these years may be taken as the most common ones for death by tuberculosis; at this period of life only 16.14 per cent. of all the deaths from cancer occurred. The semi-decades in which ten per cent. or more of Reiche's 11,930 deaths from cancer took place were those from the ages forty-five to seventy-five years, so these may be taken as the common ones for cancer; at this period of life 26.6 per cent. of the tuberculous deaths occurred. It is interesting, too, to note that the highest number of tuberculous deaths in any semi-decade occurred at the ages thirty to thirty-four, viz., 15 per cent., and during this period only 2.36 per cent. of the cancer deaths took place; also that the highest number of cancer deaths, 14.2 per cent., occurred at the ages sixty-one to sixty-five, and at these ages only 3.35 per cent. of the deaths from tuberculosis took place. The failure of the two lesions to be more frequently associated may, therefore, be largely accounted for in this way.

Tuberculosis, presumably, is fatal to large numbers in early life who might, had they lived longer, have developed cancer. It is evident, too, that if in early life tuberculosis develops and is conquered, a healed or latent process will be found at autopsy. We naturally, therefore, expect to find healed tuberculosis more frequently at autopsies on older people than at autopsies on the young. In Reiche's 11,930 cancer cases, the greatest proportion of cancer deaths to all deaths at any given age of life was 7.3 per cent., while in 1,196 post-mortems in which healed tuberculosis lesions were found (Fowler, Heitler, Lubarsch, Martin, Zahn) 20.4 per cent. had cancer. Thus the prevalence of cancer is less in the community in general, even at the cancer age, than in those with healed tuberculosis. Such facts have led Fowler and Godlee to say, "It is remarkable that the tissues of an individual who ultimately succumbs to a disease of the type of cancer should have had at one time resisting power sufficient to overcome an established tuberculosis."

The following statistics may be of interest: In 14,415 post-mortems following death from all causes (Dürck, Lubarsch, Osler, Zahn) tuberculosis active or healed was found in 35.5 per cent. In 1,955 post-mortems for cancer (Boas, Lebert, Loeb, Lubarsch, Osler and McCrae, Rapok, Sandor-Miclesco, Schräder, Williams) only 15.3 per cent. showed tuberculosis, active or healed. In 1,014 post-mortems for cancer (Boas, Kelynack, Lebert, Lubarsch, Mouisset, Osler and McCrae, Williams) active tuberculosis was found in 5.5 per cent., and in 672 post-mortems for cancer (Boas, Lubarsch, Osler and McCrae, Williams) healed tuberculosis was found in 10.87 per cent. The tuberculosis post-mortems of course include many cases of young age, when cancer would be very rare.

Clinically, in 260 cases of breast and uterine cancer, Williams found 5.8 per cent. of active tuberculosis; and in 75 women with non-cancerous tumors, he found 5.3 per cent of active tuberculosis. From these statistics it would seem that active tuberculosis occurs in about 5½ per cent. of all cases that die of cancer, about the normal frequency for active tuberculosis in all persons at the cancer age. But to draw any positive conclusions from post-mortem statistics it would be necessary to compare the percentage of cancer cases in the tuberculous at any given age with the occurrence of cancer in the non-tuberculous at the same age. Unfortunately, autopsy statistics of cases in which both diseases occur fail to state the ages of the subjects. From our study of cases so far, however, we may infer, we believe, that in all probability the two diseases neither antagonize nor favor each other in any specific manner. It seems probable that tuberculosis does not favor the development of cancer any less or any more than other long-standing lesions involving chronic irritation or de-

pressed vitality of the tissues: and that cancer does not favor the development of tuberculosis any less or any more than other conditions which markedly influence nutrition and tissue-vitality.

The following cases of antagonism are too few to influence our conclusions. In our two cases the death was rather from cancer than from tuberculosis, and when the cancer became active, the regular tuberculosis temperature subsided. Picot remarks of a case of pulmonary tuberculosis with cancer of the liver "From day to day the patient became worse, in spite of the *absence of fever.*" In McCaskey's case there was not at any time either fever or accelerated pulse.

The Fenwicks write, "In one case which we were able to watch through its course, a rapid tuberculosis of the lungs and intestine came suddenly to a halt when symptoms of malignant disease of stomach and pancreas made their appearance. After death, at the end of eight months, not only was the pulmonary lesion found completely quiescent, but more than thirty ulcers in the bowel had either partly or completely cicatrized."

The recession of cancer on the outbreak of pulmonary tuberculosis is reported by Paget; and Sigg describes the dwindling of a recurrent carcinoma of breast and axilla as soon as active pulmonary tuberculosis made its appearance. In view of the fact that so many cases of association are found in the literature, these very few cases of apparent antagonism must not be given undue weight, though certainly lending support to Martin's remark that cancer does not antagonize the first infection of tuberculosis, but tends to retard its progress.

The statement sometimes made that cancer occurs at an earlier age in those with tuberculosis is not borne out by Osler's statistics of pulmonary tuberculosis; in our discussion above of lupus we have noted opposing opinions in this regard.

Heredity.—Besides the cases of actual association, the seeming hereditary relation between the two diseases is of interest. Burdel, citing a case in which the mother had cancer, and the patient, a sister and two children had tuberculosis, states that "tuberculosis of the child appears to be favored by cancer of the parents." Schley's patient, with primary tuberculosis of the breast, had a sister with cancer of the uterus. The Fenwicks say "Of our gastric cancer cases 26 per cent. possessed one or more near relations who had succumbed to phthisis . . . It is also interesting to observe that the progenitors of cancerous families are often themselves the sole survivors of tuberculous families; and that, while the cancerous proclivity shows itself most in the elder children, the younger ones not infrequently succumb to tuberculosis. In other instances cancer and tuberculosis alternate in successive generations." Williams writes "Pulmonary tuberculosis is by far the most prevalent disease among the relatives of cancerous persons, who are very much more prone to it than the rest of the community. . . . Indeed the liability (of the offspring of the cancerous) to pulmonary tuberculosis is so considerable as to even equal that of the (offspring of the) tuberculous themselves. . . . Hence those who survive the peculiar kind of degeneracy associated with the tuberculous predisposition are at a later period of life especially prone to cancer." Williams found a family history of tuberculosis in 10 to 25 per cent. of the general community, while in his 260 cases of uterine and breast cancer he obtained a family history of tuberculosis in 50 per cent. From various statistics which we have gathered, we find a family history of tuberculosis in the tuberculous in 48 to 60 per cent., a family history of tuberculosis in the cancerous in 25 to 50 per cent., and a family history of tuberculosis in the general community in only 10 to 28 per cent. We have been unable to obtain adequate statistics in regard to a family history of cancer in the tuberculous. In Osler and McCrae's 150 cases of cancer of the stomach at Johns Hopkins Hospital, 25.3 per cent. gave a family history of tuberculosis, exactly the same proportion as in 150 control non-cancerous cases chosen at random.

Before concluding I should like to refer especially, as of clinical importance, to those cases in which tuberculous lymph-nodes have been found in the neighborhood of a cancer. Metterhausen had two cases of pyloric cancer with tuberculosis of the neighboring glands. Clement had three cases: cancer of lower jaw with tuberculous cervical glands, cancer of right breast with tuberculosis of the right axillary glands, and cancer of the stomach with tuberculosis of the omental and axillary glands. Hildebrand recalls cases of amputation of the breast for carcinoma with tuberculous axillary glands, and of cancer of the lip with tuberculous glands in the neck. The Fenwicks write, "Not a few examples of malignant disease of the stomach present old tuberculous lesions in the glands of the left supraclavicular fossa."

Our conclusions may be stated as follows:

1. Cancer and tuberculosis not infrequently occur together in an active state, and may be intimately associated in the same tissue.

2. There is probably neither specific favoritism nor specific antagonism between the two types of disease.

3. There are a few reported cases in which one of the affections seems to have exerted a modifying influence on the course of the other.

4. Lupus favors the development of epithelioma.

5. Cancer is more common among those with latent tuberculosis than among others at the cancer period of life.

6. The common age for cancer is not the common age for active tuberculosis (Cruveilhier, 1828).

7. The common sites of cancerous involve-

ment are mostly not those of tuberculous involvement and vice versa (Rokitansky, 1838).

8. A family history of tuberculosis is more frequent in the cancerous than in the general community, and there may be some hereditary relation between the two.

9. A latent tuberculous process in a lymph-node may become active when a cancer develops in the neighborhood.

10. Lymph-node enlargement in the vicinity of a cancer is not always cancerous (Claude, 1899), and may be solely tuberculous.

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THE MININ RAY.

BY WILLIAM GRAY SCHAUFFLER, A.M., M.D.,
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THE recent death of Niels Finsen has removed from scientific medicine one to whom we owe a great debt. It is given to but very few in each generation to accomplish as much good for mankind as did this noble and modest worker in photo- and electrotherapy.

All the more does it become the duty of each individual to add his contribution, however humble, to the scanty knowledge we at present possess of the therapeutic value of light and electricity.

It has been my fortune for the past two years to have done considerable work with the so-called Minin ray, as brought to this country and put on the market by a western house. The apparatus consists of a series of incandescent lamps of about 16, 32 and 50 candle-power, together with suitable reflectors, cords and stand. The glass bulbs are made of a peculiar, very dark blue glass, and the light transmitted apparently has lost much of its original heat, as experiments have demonstrated. That the transmitted rays are not ultra-violet, as some claim, is proved by the fact that Willemite does not fluoresce when exposed to them. Just what rays do pass through this blue glass, remains to be shown by further experiment, but the results obtained are so varied and striking that I have collected a number of cases from my own practice, in the hope that others may be induced to try the Minin ray with the same gratifying results to themselves and their patients.

Discarding the stand furnished with the lamps, I attach the same by means of a six-foot cord to any 110-volt lighting current, either direct or alternating, allowing the patient or nurse to hold the reflector six to eight inches from the part to be "rayed." The only caution needed is not to allow the glass bulb to touch the skin. The bulb heats so quickly and retains the heat to such an extent that a blister would immediately follow contact with the skin. Burns of the skin from long-continued use of the rays have not resulted in my experience, although a marked reddening of the surface rayed is immediately apparent.

The application of the light lasts from ten to twenty minutes, according to the part to be acted upon and the result sought. In no case have I found any unpleasant reaction resulting from the use of the Minin rays, and in almost all cases there have been positive favorable results.

Case I. Old Suppurating Burn.—J. C., forty-five years old, laborer. Had burn of second degree, covering whole back of right hand and fingers. When first seen it had been neglected, and was suppurating and covered with filthy crusts. Patient had not slept for two nights. Cleaned with an antiseptic and Minin ray applied for fifteen minutes. Pain was relieved at once. Dry dressing applied. On following two days

same treatment was applied, and on fifth day the wound was healed. Following the first treatment patient was free from pain. No contraction of skin or muscle resulted.

Case II.—F. C., Twelve years old. While he was setting off fireworks a bomb exploded prematurely in patient's face, burning him from chin to hair and from ear to ear. When first seen, within half hour after the explosion, the patient was screaming with pain. His face was blackened and swollen, his eyes closed and his eyebrows, eyelashes and hair over forehead burned to a crisp.

The face was rayed for thirty minutes, moving the lamp from side to side so as to illuminate the whole burned area. After ten minutes of treatment the pain subsided, and before the end patient had gone to sleep. The treatment was repeated every four hours for four days, then every six hours for two days and then twice in twenty-four hours for three days. On the eighth day the boy was out, going about as usual, with only slight discoloration of skin. No other treatment was used, except bathing the eyes frequently with warm milk.

Case III. Ivy Poisoning.—A. L., seventeen years old. Severe case involving whole face and neck. Usual remedies had done no good. Applied rays to affected area every three hours during night (there being no electric light available during the day). Pain and itching were relieved at once and patient enabled to sleep. Four nights of treatment sufficed to cure.

Case IV.—R. S., twenty-five years old. Patient especially susceptible to ivy poisoning, which usually lasted fourteen to twenty-one days. Rays applied at once to small area involved on left side of face. Relief was immediate, lasting several hours, when renewed, raying again relieved and for a longer period. Treatments lasted for fifteen to twenty minutes, and were repated four to five times in twenty-four hours. Irritation did not spread beyond area first involved, and patient was cured in less than a week. I had an exceptional chance to observe this case, as it occurred in my own house.

Case V. Tracheitis.—J. M., fifteen years old. This patient had a tuberculous family history, and was herself a hemophiliac. She was of extremely nervous temperament, and even a slight cold would set up a high temperature with paroxysms of violent coughing, and severe pain at the root of the neck, apparently between the larynx and the bifurcation of the trachea. A previous attack in which I attended her lasted ten days acutely, and the irritating cough and pain continued for three weeks, even after a change of climate. All sorts of internal medication, as well as inhalations and external applications, failed to give relief in previous attacks. Within six hours after the commencement of the last attack, due to "catching cold," the Minin rays were applied from a 32-c.p. lamp held twelve inches from the neck for fifteen minutes at a time. Treatment was repeated every four to six hours, and no medication of any sort given. The first treatment relieved the pain, and within twenty-four hours the cough had ceased to irritate. The nervous symptoms, accompanied by rise of temperature, which had always followed the beginning of such attacks, did not appear, and the patient was up and about on the third day. In this case the action of the Minin ray evidently penetrated to the tissues of the trachea and larynx, allaying a sharp irritation of the mucous membrane. This same action is shown even more forcibly in the next.

Case VI.—Mrs. R. T., thirty-six years old. Suffering from phthisis and tuberculous laryngitis. Patient was sent to me by a throat specialist with request to touch the vocal cords with a strong solution of nitrate of silver several times a week. This treatment naturally caused much pain and choking and a persistent metallic taste. It occurred to me to try the effect of the Minin rays applied to the neck before treatment with the nitrate of silver, with the result that the patient no longer felt the pain of the treatment, the choking was reduced to a minimum and the metallic after-taste disappeared.

These cases are but a very few of a large number of varying conditions in which I have been using Minin rays, and I have no hesitation in asserting that we have in this light a safe and reliable means of treating many inflammatory conditions, including joint affections, which have hitherto given the general practitioner much thought and worry.

TROPICAL MALARIA.[1]

BY JOHN V. SHOEMAKER, M.D., LL.D.,
OF PHILADELPHIA;
PROFESSOR OF MATERIA MEDICA, PHARMACOLOGY, THERAPEUTICS AND CLINICAL MEDICINE IN THE MEDICO-CHIRURGICAL COLLEGE.

Since our acquisition of new territory situated within the tropics it has become particularly incumbent upon Northern physicians to give renewed study to the aggravated forms which diseases so often assume in hot climates. It may be anticipated that we shall be brought into more frequent contact with such disorders than we have in the past. The physicians of our Southern and Southwestern States have had much more experience than we in this field. Yellow fever and cholera have occasionally invaded the North, but these visitations are infrequent and most of us in this part of the country have never witnessed an epidemic of those diseases. Sporadic cases of leprosy occur from time to time. I have met with a number in Philadelphia and have reported several in the medical journals. Beriberi has been sometimes brought to our shores by ships from tropical ports. In the Medico-Chirurgical Hospital we have had sailors suffering from that disease, and at our Quarantine Sta-

[1] An address delivered before the Medical Association of the Greater City of New York, October 10, 1904.

tion eleven cases of beriberi were observed by Dr. Judson Daland among a crew of Lascars, certain of which cases showed the presence of the *Plasmodium malariæ*.

Teachers in the North must lay stress upon the subject of tropical medicine, for it may be surmised that, in addition to those who enter the National Services, many will seek civil practice in our new possessions.

During and immediately after our short war with Spain I had an opportunity of observing the more severe forms which malaria exhibits in the tropics. Among the soldiers who were brought to the Medico-Chirurgical Hospital from Cuba, Porto Rico and the camps of this country, were 53 cases of malaria. Many of these were of the ordinary intermittent type with which we are all familiar. A certain number, however, presented a more profound and—in my experience—unusual intoxication, and it is of these latter that I wish to speak, in accordance with the courteous invitation of the president and secretary of your society.

I employ the term "tropical malaria" as indicative of the behavior of the *Plasmodium* in cases occurring in the tropics. The clinical symptoms, accordingly, manifest an intensity which is seldom or never displayed in the temperate zone. The parasite itself is profoundly modified in hot countries. Malignant malarial parasites are particularly confined to the tropical and subtropical regions. With the recognition of the *Plasmodium* and the knowledge of its transmission by the mosquito our conceptions of malarial infection in its different forms have been rendered much more exact. We have, moreover gained an immensely important advantage, in the possession of absolute scientific tests, upon which we may depend in diagnosis. As regards the *Plasmodium* itself, we have learned much concerning its different phases or cycles, within and external to the human body. The parasite propagates itself in the body of the mosquito, is transferred to man and undergoes, in the plasma and red corpuscles, a series of transformations which end in sporulation. It has been discovered that only certain species of the genus *Anopheles* serve as hosts of the malarial parasite. The *Plasmodium* itself exhibits certain differences as regards form, rate of evolution, and the clinical forms of disease to which it gives rise. This classification simplifies considerably the differentiation of the varieties of malaria as it occurs in temperate or tropical climes.

It is possible to distinguish under the microscope many forms of the hematozoa; the flagellate body, the ordinary intra- and extracorpuscular body and the ring form, as well as the crescentic. One of these forms completes its cycle in forty-eight hours and one in seventy-two hours.

The study of the *Plasmodium* in its various phases has enabled us to revise the classification based upon purely clinical phenomena. The malarial paroxysm coincides with the sporulation of a group of the parasites contained in the red blood corpuscles. If *Plasmodium* is present in various stages of development the discharge of the spores and toxins is irregular; the typical periodicity of symptoms is disturbed, the fever assumes a remittent or continuous type, and the temperature charts exhibit a less distinctive zigzag outline. This was illustrated in the more severe cases of which I am about to speak.

A proportion of my cases were of that type which have generally been known as bilious remittent, the estivo-autumnal, or summer-autumn, fever of the Italians.

Our most severe cases were among the soldiers who had served in the field at Santiago and in Porto Rico. Most of the cases were distinguished by severity of symptoms and the irregular course of the fever. All were accompanied and followed by extreme prostration. According to the histories which we obtained, they began more or less insidiously with headache, which was in some instances excessive, backache, general weakness, anorexia; in some cases there had been pain in the neck or all over the body or general soreness; one patient suffered from a dull feeling at the lower border of the left ribs and a pain in the lumbar region. In a number of instances vertigo occurred. In one case it is noted that the eyes suddenly became very painful. Some patients complained of pain in the bones. In some of the men fever had supervened without any well-marked chill. In other histories the chill figures as a prominent feature. One man suffered from a prolonged chill every day, accompanied by fever of the remittent type. Sometimes, but not always, the fever was followed by profuse sweats. The man was exceeding debilitated. One interesting case displayed a chill every morning and every afternoon for two weeks; each chill was succeeded by fever and sweats. The temperature charts departed widely from that of ordinary or benign malaria. In another case the initial chill is described as severe; it had been preceded by intense pain in the head and back, and returned every day for three days. One patient stated that his attack began abruptly with a chill, which was repeated upon the following day. Severe chills were experienced by a number of patients. One man's illness began with a rigor which lasted for half an hour, followed by fever and profuse sweating. His headache was violent. Chills recurred every other day. Upon one occasion the chill lasted as long as two hours. Another patient had a chill every other day lasting an hour and a half, followed by high temperature. One man went to sleep at night with a violent headache and awoke to find himself in a cold sweat, which was followed by a chill and fever, a reversal of the ordinary succession. He was extremely weak. Another patient had a violent chill after having been ill for four days, and subsequently suffered from a repetition of chills every day for twelve days. In many of the cases there was such a blending

of succeeding paroxysms with the febrile rise and fall that the record approached that of a continued fever.

Several cases were accompanied by acute bronchitis. There was cough, with mucoid sputum and pain in the chest; one patient suffered from acute bronchitis two or three days before he was attacked by pain in the head and burning sensations in the eyes, after which chill, fever and sweat developed; the bronchitis continued throughout the case. The history of another man speaks of "a very bad cough." Gastro-intestinal symptoms were marked in a considerable proportion of the patients. All experienced loss of appetite and loathing of food. As a rule, the tongue was heavily coated. Nausea and vomiting were common, and some of the men complained of abdominal pain. Of one patient it is written that he was early attacked with violent cramps, which lasted for four days, being accompanied by fever, nausea and dysentery. The diagnosis of this and three other cases reads: malaria with dysentery. A fifth case is recorded as malaria and diarrhea. Of one man it is registered: abdomen tender but not tympanic. This patient had a severe attack of vomiting. Pain in the stomach, vomiting and diarrhea were the prominent features of another case. In other histories also mention is made of diarrhea. Diarrhea in the begining of the case, followed by constipation, was observed in a number of the patients. Nausea and prostration were so marked in one instance that we administered champagne in cracked ice. The gastric symptoms (vomiting and pain) were so prominent in one patient that the history is headed: Malaria and gastritis. In some attacks the bowels were unaffected; in others constipation was the rule. The spleen was more or less enlarged in most of the men. In some there was tenderness over the spleen without much increase of size.

In several patients the color of the skin was noteworthy. The discoloration varied from a sallow hue to the deepest jaundice and testified to the alteration of the hemoglobin by the malarial parasite and its liberation from the red cells. Many of the cases exemplified the great tendency to recurrence in this variety of malarial fever. After a defervescence of ten days to two weeks the symptoms would return and run a similar course. In many cases there was a decided diminution in the secretion of urine. It was high-colored, contained urea, uric acid, bile-pigment, and, in some instances, albumin. In one case there was hematuria.

Two cases were especially remarkable. The deep yellow shade of the whole body, the vomiting and diarrhea were highly suggestive of yellow fever. There was no genuine black vomit, although the material ejected from the stomach was dark in color. These men lay in a state of stupor attended by low delirium.

Such is a brief analysis of the chief features of the malarial cases from the West Indies. Brought into the hospital intermingled with five times as many typhoid fever patients, it was necessary to be extremely careful in framing the diagnosis and distinguishing between the two classes of patients. The tracings of the chart were not very dissimilar to those of typhoid fever, and the occurrence of abnormal tenderness with diarrhea and extreme debility might cause hesitation. So suggestive was the analogy in some instances that the clinical notes particularly specify the points of difference; of one patient it is said: no nose-bleed; no rose-colored spots. Of others we read: no rose-colored spots upon the abdomen; no tympanitis; no bronchitis; no tenderness or gurgling in the right iliac fossa, and absence of the Widal reaction. Fortunately for accuracy we are no longer dependent solely upon clinical observation. The presence, on the one hand, of the *Bacillus typhosus* and the evidence of Widal's test, and on the other the detection of the malarial parasite, sufficed to settle the diagnosis respectively for typhoid fever or malaria. The cases in which the skin was so dark in hue were distinguished from yellow fever by the continuation of high temperature (that of yellow fever runs a shorter course); and, above all, by the presence of the *Plasmodium malariæ* in the blood. Judging from the cases which

Chart of Case I.

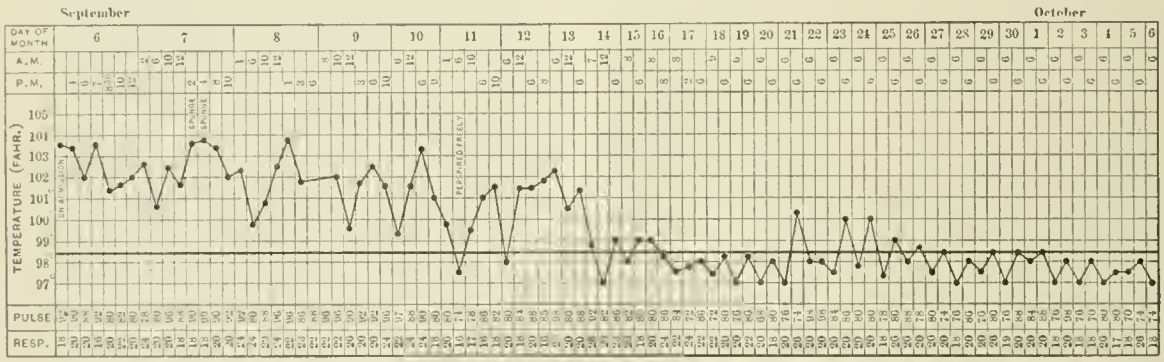
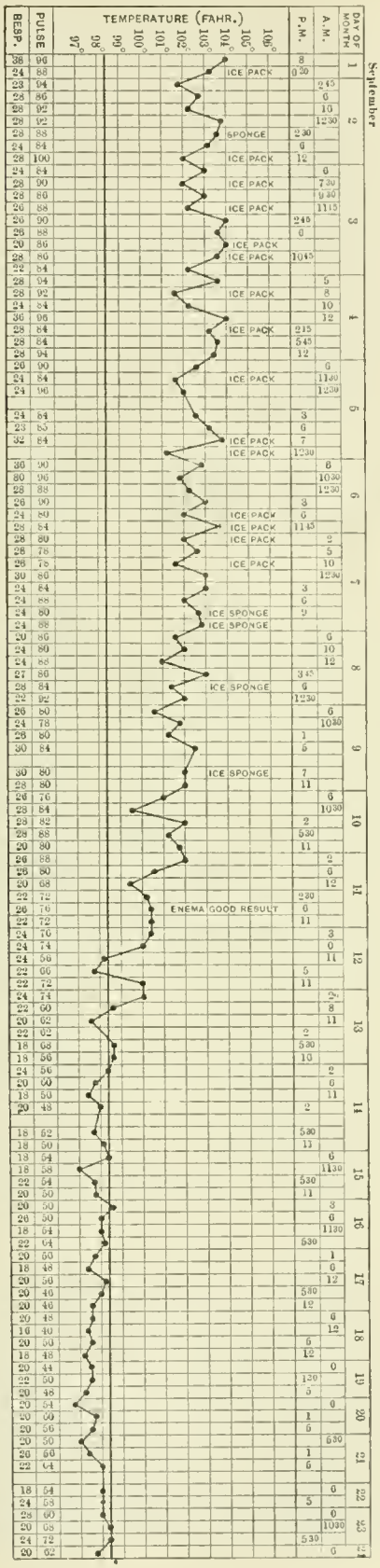


Chart of Case II.



came to us, I should infer that prior to Laveran's discovery in 1880 many cases of severe malarial intoxication were confused with yellow fever. Both diseases, moreover, prevail at the same season of the year. Furthermore, yellowness of the skin is sometimes absent in yellow fever. In yellow fever the pulse is more slow than in malaria, albuminuria is almost invariable, the face is flushed, the eyes brilliant, and the mind is usually clear.

Again, purely from clinical study, it would be difficult, if not impossible, to distinguish between some of our malarial cases and typhoid fever. In both there was diarrhea or constipation; in both there was enlargement or tenderness of the spleen; there was great prostration of nervous and muscular strength and there was delirium in both classes of cases. Our severe malarial cases had contracted the disease in the tropics, they were brought to us after having suffered from the intoxication for two weeks or more, some were suffering from a relapse, and all were in a condition of extreme debility. As regards the differentiation of severe malaria and typhoid fever, we are told that until recent years typhoid in the East Indies was generally regarded and treated as malarial fever. Thus this comprehensive type of intoxication—malaria—may simulate yellow fever at one extremity of its field while at the other it bears a resemblance to typhoid fever. It is a happy circumstance, indeed, that in two out of three distinct diseases we are in possession of absolute and scientific tests which certify to the differential diagnosis.

Case I.—P. V., male, aged twenty-seven years; admitted to Medico-Chirurgical Hospital August 6, 1898, discharged, cured, October 16, 1898. Diagnosis malaria (remittent).

Case II.—J. W. S., male, aged twenty-three years, admitted to Medico-Chirurgical Hospital September 1, 1898; discharged September 24, 1898. Diagnosis, typhoid fever.

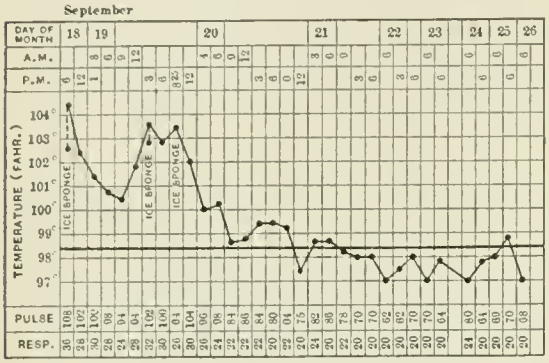
Case III.—A. W., male, aged nineteen years; admitted to Medico-Chirurgical Hospital September 18, 1898; discharged September 26, 1898.

Case IV.—W. M., male, aged thirty-five years; admitted to Medico-Chirurgical Hospital, November 4, 1898; discharged December 15, 1898.

In the treatment of these severe cases of tropical malaria quinine was our main reliance. In our worst cases, however, the stomach was so irritable and vomiting was so incessant that the drug was not retained when given by mouth. Under such conditions I made use of suppositories containing quinine. In cases accompanied by constipation small repeated doses of calomel placed upon the tongue produced movement of the bowels and at the same time allayed the gastric irritability. The rectum, when not clogged by feces, is a good absorbing surface. In cases of gastric ulcer, for instance, life has been sustained for weeks and months entirely upon nutritive enemas. Injections containing quinine in the proportion of ten grains to the

ounce of water with the addition of a few drops of acid to promote solution, have likewise been employed in similar cases. Suppositories, however, can be put in place with less disturbance of the patient, and we know by practical proof that their active ingredient is absorbed. They produce their constitutional or physiological effects.

Chart of Case III.

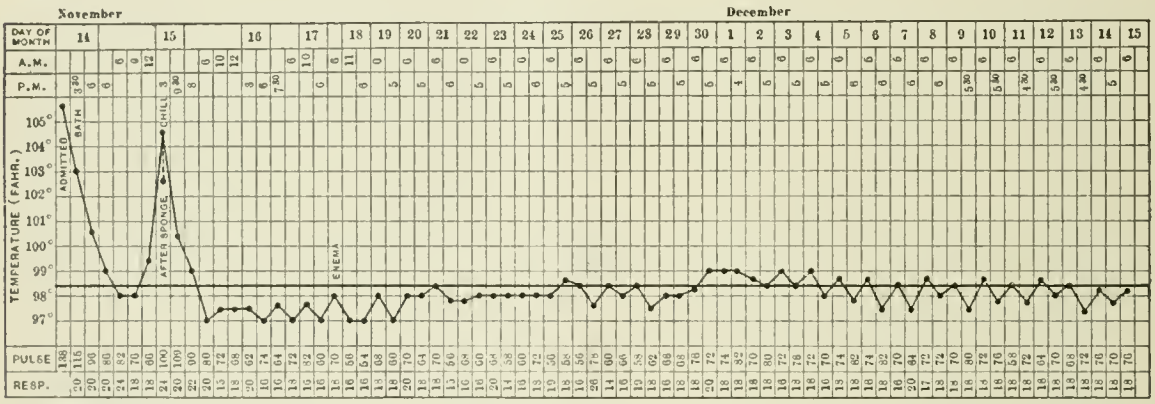


As a rule I employed a 5- or 10-grain quinine suppository every two or three hours, according to the severity of the symptoms and endeavoring to anticipate the paroxysm, *i.e.*, sporulation, by the introduction of as large an amount of the drug as possible. Under the influence of this agent, given in this manner, the tendency to chills was reduced, the functions of the bowels and kidneys were promoted, and the gastric irritability gradually subsided. In some cases, and to meet certain indications, synergistic agents were associated with the specific remedy. When diarrhea was present, I combined equal quantities of quinine and salol with good result—usually five grains of each drug. The antiseptic and antipyretic properties of salol rendered it of material assistance to quinine in checking the diarrhea and reducing the temperature. In some cases ipecacuanha, in one-quarter grain doses, was incorporated in the suppository, conjoined with the quinine; this union lessened the irritability of the intestinal mucous membrane and increased the secretions; it had also a sedative action upon the nervous system.

When nervous symptoms were prominent cannabis Indica or monobromated camphor was combined with the quinine. While the quinine destroys or renders the parasite inactive, the other drugs are useful in raising the tone of the central nervous system and relieving the morbid excitability which resulted from the malarial intoxication. Indian hemp possesses valuable antispasmodic properties. Camphor likewise produces a similar effect upon the nervous system. In monobromated camphor with quinine we have an excellent combination of stimulant and antispasmodic qualities. These drugs, given together, allay restlessness and strengthen the heart, the functional activity of which was seriously depressed in the cases of which I speak. If the bowel was irritable, I used an enema of starch water and laudanum before inserting the suppository.

When the fever was high the patient was sponged. In the worst cases it was necessary to place the patient upon a milk diet. Notwithstanding the profound malarial intoxication of some of these cases yet, happily, none had a fatal termination.

Chart of Case IV.



The principal points in this series are the gravity of the cases, the very marked and prolonged debility which the disease produced, the resemblance of some to yellow fever and of others to typhoid, the diagnostic value of the scientific tests, and the efficacy of quinine administered in the form of suppositories when the stomach is intolerant.

Medical Schools to Amalgamate.—It is stated that the Hahnemann Medical College will soon absorb the Chicago Homeopathic Medical College. Dr. George F. Shears, the present head of the Hahnemann, will be the President of the combined colleges. The Chicago Homeopathic Medical College, in merging with the South Side institution, loses its identity. It is believed that this is the first step toward the addition of a homeopathic medical department to the University of Illinois. The combined enrollment of the two affiliated institutions will approximate three hundred; the property is valued at more than $400,000.

MEDICAL PROGRESS.

SURGERY.

Technic for Intestinal Anastomosis.—Until the ideal method is finally reached, there will unquestionably be a continuance of the suggestions for altered and improved technics in this field. FREDERICK HOLME WIGGIN (*Lancet*, November 19, 1904), in a leading article, discusses, (1) a modified method of invaginating the appendix, and (2) a method of intestinal anastomosis, which is a modification of that of the late Prof. Maunsell. The writer has employed the method of anastomosis as originally devised by Maunsell many times, between 1893 and 1897. During this period, it became evident to him that the making of the secondary slit and the subsequent invagination of the cut ends was an unnecessary complication. The technic which he devised and which he has subsequently used on many occasions, was as follows: The portion of the intestines to be excised is exposed freely without the abdominal cavity. It is then emptied of its contents above and below the damaged spot, and the usual clamps are adjusted on either side of the damaged portion. The mesenteric vessels are tied before being cut and the wound in the mesentery is closed by means of interrupted sutures. After the divided ends of the intestine have been disinfected with hot saline solution and hydrozone, the ends are united by two sutures, which are passed through all the intestinal coats. The first suture is placed at the interior of the mesenteric border and is passed in such a manner as to inclose a portion of the mesentery on both sides. This is tied in the bowel and the ends are left long, so that by it and its mate, the intestinal sutures can be held in place while the other sutures necessary to complete the union, are being put in. This mate suture is placed directly opposite at the highest point of the superior border. These two sutures are so held as to make the parts taut. A third suture is passed simply for convenience between the first two and in a similar manner. Its ends, however, are cut short after it has been tied. The parts are then sutured through and through from within outward and piercing all the intestinal coats, then back through the peritoneal, muscular and mucous coats to the interior of the other segment of the bowels. Seven sutures can be conveniently placed, making nine in all. This unites half the circumference of the divided bowels. The remaining 180 degrees can be conveniently covered by placing a suture half way on the ununited end, leaving its ends long and using them to hold the tissues while the parts are sutured as before. This suturing is continued until the last one is to be placed, when a Lembert is substituted. When the sutures have been properly placed, it will be found that the peritoneum is turned in and that, with the exception of the last one, they are not visible. If, for any reason, they can be seen, they should be covered by a reinforcing Lembert stitch. The bowel should then be washed with a 50 per cent. solution of hydrozone, in saline solution, then with saline solution and returned into the abdominal cavity. This should also be washed and filled with the normal saline solution before the abdominal wound is closed.

Operative Treatment of Perforating Gastric Ulcer.—There is no question that the main element tending to success in operating for this lesion is an early diagnosis. A. B. ATHERTON (*Annals of Surgery*, November, 1904) states that on September 19, 1894, he operated to close a perforated gastric ulcer. This was the first occasion upon which this had been successfully accomplished on this continent. The chief reliance, in the opinion of the author, should be placed on the location and severity of the pain together with the board-like hardness of the muscles. Considerable help is also afforded by the previous history of dyspeptic symptoms. Not much dependence can be placed on liver dulness, neither can the presence or absence of the symptoms of shock be looked upon as at all important. Usually more or less will be found at the onset, but this is not always true. Some vomiting usually occurs and a little blood may be found in the vomited material.

Fractures of the Base of the Skull.—Rawling's recent extensive work on this subject has given a fresh interest and impetus to it. GEORGE L. WALTON (*Annals of Surgery*, November, 1904) concludes, as a result of a study of fifty cases of basal fracture autopsied recently at the Massachusetts General Hospital and at the Boston City Hospital, (1) that in a majority of the cases the basal fracture resulted from impact received in the horizontal plane of the skull, whether upon the frontal or the occipital region or upon the side of the head. (2) While certain of the basal fractures extended from the vertex, there was no suggestion of the contre-coup of earlier writers. (3) The line of fractures tended to enter the fossa nearest the point of impact, and to extend in the general direction in which force was applied. (4) The line of fracture in traversing the base tended to follow lines of least resistance, and in twenty-two of the fifty cases, these lines corresponded more or less accurately to those indicated by Rawling, but the exceptions were too marked and too constant to allow the establishment of fixed rules. (5) The sella turcica was implicated in 36 per cent. of the fractures. The petro-occipital and masto-occipital sutures furnished common lines of least resistance. Fractures extending across the base tended to run parallel to the petrous portion of the temporal bone and through the sella turcica. Certain blows on the occipital tended to cause a line of fracture extending to the jugular foramen or across the petrous bone. The portion of the petrous bone containing the auditory apparatus showed itself peculiarly liable to fracture, more often transversely than longitudinally. (6) In seven cases (14 per cent.) the fracture was limited to the base after vault impact in the horizontal plane. Neither Rawling's theory of transmitted force nor the theory of bursting fracture of Von Wahl and others suffices alone to explain these cases. The results of experiments with bodies of simpler structure would suggest the bursting principle of transmitted force in case of blows, while both play an important part in case of falls. (7) The orbital foramen was implicated in 21.4 per cent. of the cases of orbital fossa fracture. (8) Inequality and immobility of pupils, or both, furnish the most frequent and unfavorable sign of fracture of the base. In the forty-four cases in which the pupils were recorded, they were normal in only thirteen. (9) Injury to the ciliospinal tract in its intracranial course is a more probable cause of the Hutchinson pupil and the other pupillary damages than injury to the third nerve or to the cortex, though no single lesion explains all cases. (10) The reflexes may be lessened or lost in fracture of the base, as in any case of violent jarring of the brain. On the other hand, they may be increased even to spasticity, probably through direct pressure on the pyramidal tract, as by hemorrhage. It is probable that the initial result of the impact in all cases has a tendency toward

lessening or loss of the reflexes. (11) Profuse and persistent bleeding form the ear does not suggest middle meningeal hemorrhage.

New Operation for Intestinal Stenoses.—Every one is bound to read with increasing interest the progress of the ingenious devise for securing intestinal anastomoses known as the elastic ligature. Theodore A. MacGraw (*Annals of Surgery*, November, 1904) in a fully illustrated article demonstrates that the width of the field of its utility has by no means yet been explored. Having shown how certain of success this devise is in establishing anastomoses and struck with the experience of all surgeons that resections of the colon are followed by a very high rate of mortality, he has endeavored to apply his device to this part of the gut. Wolfler in 1806 stated that 54 per cent. of resection on the large and small intestines resulted in death. It has been definitely shown that the mortality rate varies constantly with the position of the site of operation. The lowest rate being in the ileocecal region, the next safer area being the sigmoid. All radical operations on the transverse colon and the flexures have been attended with a high percentage of deaths. From a careful study of the subject, the author believes that this high mortality rate is due almost entirely to the inability of the surgeon to isolate the transverse portion as well as the two extremities of the great gut. Infection of the abdominal cavity is in most cases the source of death. Furthermore, in view of the fact that half of the colon cases die, it is but natural that surgeons have hesitated in the past to operate until they were absolutely driven to it. As a result of this, many cases have been operated on which were nearly moribund. For this reason the German surgeons resorted long since to an operation in three stages. Obviously, however, although of 12 cases so treated by Mikulicz, ten recovered, the method is so slow as to be of questionable value, and furthermore, it is needless to state that a condition requiring three operations for its relief calls for serious study. The first and essential considerations are that the abdominal cavity be protected from infection by deferring the evacuation of the intestinal contents until the closure of the abdominal wound. Second, the avoidance of secondary operations. The physical examination of the patient should be most careful and complete, the abdominal peristalic wave being one of the surest aids in locating the seat of the trouble. Distention of the lower colon and sigmoid by gas or fluid in fat people is also advised. Having located the tumor, operate directly over it. The coil in which it is located should be drawn out of the abdomen, two limbs of the intestine leading to and from the tumor should be joined together by Lembert sutures and an anastomosis be made with an elastic ligature. The wound is now closed snugly around the protruding coil, the ligatured portion remaining in the abdomen and the tumor with two or three inches of gut outside. A firm silk ligature should be tied around the efferent limb just below the tumor and the gut cut off below it, care being taken that none of its contents soil the wound. On account of the obstruction above it, this part of the gut is always small and is easily handled. It is now closed by an invaginating suture and pushed in until its outer surface no longer projects. The skin is then brought over it and sutured. In this way the efferent limb is entirely disposed of. The efferent limb is now treated as follows: An ovarian trocar is thrust into the intestines and the feces discharged. As soon as this has been accomplished, the diseased portion is removed and a large glass tube inserted into the bowel and tied in place. At the end of four or five days the feces will pass through the anastomosis established by the ligature. The tube may then be removed, the gut sutured and invaginated and the wound of the integument closed over.

PATHOLOGY AND BACTERIOLOGY.

Experiments on the Dissemination of Tuberculosis in the Female Genitals.—This question has been subjected to animal experiments by P. Baumgarten (*Berl. klin. Woch.*, October 17, 1904). The results were quite uniform in the 50 rabbits employed. The material used was the bacillus of the "perlsucht," either as an emulsion or bits of the nodules. The lower and upper parts of the vagina and the horns of the uterus, and also the pelvic peritoneum were infected by injection or incorporation of the whole tissue. Although a severe tuberculosis of the pelvic peritoneum followed in the cases so infected, the tuberculous inflammation never once invaded the genital tract proper. It was also found that infection from the cornu of the uterus never traveled outward but always downward into the uterus. Infection of the lower segment of the vagina developed into a limited inflammation which did not go beyond certain borders but regularly invaded the urethra, although it did not extend beyond the sphincter of the bladder. The bladder, ureters and kidney remained uninvolved. Infection of the upper part of the vagina remained localized. The infection which started in the horns of the uterus also extended into the upper segment of the vagina, but never any lower. This shows that tuberculosis in this region, like that in the male, follows a definite course and is limited to definite anatomical bounds. In tuberculosis of the male genital tract, the dissemination follows the direction of the seminal current, and in the female it follows the course of the ovum from the ovary into the vagina. In the urinary tract likewise, the infection follows the course of the urinary flow. There are two localities where the tuberculous infection may spread from one to the other system. In the male this is the prostatic portion of the urethra and in the female, the urethra and the lower vagina.

Latent Microbic Infection.—The question whether the internal organs of healthy animals harbor germs has been answered both in a positive and negative sense, but has been finally settled by the careful experiments of A. Wrzosek (*Virchow's Archiv*, Vol. 178, No. 1). When fairly large-sized pieces of liver, spleen, mesenteric glands, etc., were transplanted with all aseptic precautions, a growth was obtained in a large percentage of the cases. Accidental contamination was ruled out, for a control culture showed that the germs in the air were different. Another series of animals was fed with food purposely inoculated with certain harmless saprophytic bacteria which do not normally occur in the intestinal trast. In 30 out of 47 experiments, the same organisms could be isolated from the mesenteric glands, liver, spleen, kidneys, bronchial glands, lungs, bone-marrow and muscles. Experiments were then made to ascertain by which route their various organs were infected, but the contents of the thoracic duct and the blood from the mesenteric veins were found sterile in all instances. This the author explains by the well-known bactericidal action of the lymph which prevents the development of germs when brought on culture-media. When the animals were fed with germs after the thoracic duct had been ligated, the inter-

nal organs were never found infected, which proves without doubt that the thoracic duct is the normal route. Most of the germs normally found, are probably derived from the intestinal tract; the lungs certainly play a subordinate rôle since the conditions for absorption are less favorable and most organisms are prevented from reaching the alveoli by the ciliated epithelium and the normal secretion of mucus. In the light of the above experiments the occurrence of a primary renal tuberculosis, a suppurative meningitis after exposure to the sun's rays or a cryptogenetic sepsis, would be easy to explain. The germs were already present but simply gained a foothold owing to diminished local or general resistance.

Cause of Aleppo Boil.—In the excised nodules of a typical case of Aleppo boil, E. J. Marzinowsky and S. L. Bogrow (*Virchow's Archiv,* Vol. 178, No. 1) discovered peculiar epitheloid bodies with chromatic nuclei within the cells. The secretion also contained these bodies, generally inclosed in a vacuole within the epithelium and only rarely in leucocytes or red blood cells. Stained with methylene-azur, two kinds of chromatin could be detected, one at one pole, of pale lilac color and another in the center, more intensely reddish lilac. In all probability the structure is a protozoon, closely allied to *Trypanosoma.* All attempts at culture, especially in hay-infusion, were negative. The authors apply the name *Ovoplasma orientale* to the parasite and believe that infection occurs through the bite of insects.

Relation of Paget's Disease to Carcinoma.—H. C. Jacobäus (*Virchow's Archiv,* Vol. 178, No. 1) concludes an interesting article by stating that Paget's disease is a carcinoma from the very beginning, starting from the glandular epithelium of the excretory ducts. The peculiar epidermal changes depend upon proliferation of the glandular cancer within the epithelium. The so-called Paget's cells are emigrated cancer cells; the proof of this is to be found in the fact that similar epidermal changes occur if an ordinary glandular cancer ulcerates through the skin. The slow and apparently benign course of the initial growth is due to the resistance offered by the fibrous and smooth muscle tissues. For the same reason, a cancer beginning in the deeper portions of the gland, does not readily reach the surface and gives rise to Paget's disease.

Bacillus Violaceous Manilæ.—According to a report from Manila, a new pathogenic micro-organism, the *Bacillus violaceous Manilæ,* has been discovered by P. G. Woolley (Bur. of Goverm. Lab., 1904, No. 15). The organism is a short rod staining with the usual aniline dyes, but discolorized by Gram's method. Certain clear spaces are noticed in the interior which are not tinged by the methods used for staining spores. The organism is motile and possesses one polar flagellum. On agar plates, small, round, violet-gray colonies appear in twenty-four hours, which gradually enlarge and deepen in color. Gelatin is liquefied and broth diffusely clouded. On potato, the pigment produced is luxuriant. Milk is rendered slightly acid but not coagulated. The bacillus had been isolated from three cariboos which died suddenly with symptoms of acute hemorrhagic septicemia. A very small amount of the living organism caused death of small animals and produced specific lesions without the appearance of any appreciable immunity. At the site of inoculation there is generally a wide area of necrosis with edema. The lesions in the parenchymatous organs are miliary abscesses which may show a suppurative stage. In the lungs and liver the surfaces of the abscesses may be covered with a fibrinous exudate. The bacilli are found in all lesions. The losses in stock are slight, so that there is little danger of an epidemic.

EYE, EAR, NOSE AND THROAT.

Researches on Temperature of the External Ear.—Winternitz was the first author who stated that he found that as the result of careful measurements, he was able to diagnose a regular afternoon rise of temperature in the external auditory meatus, which dropped again at night. E. Sommer (*Berl. klin. Woch.,* September 26, 1904) has recently made some observations with the very delicate thermopalpatory apparatus devised by Hertz. This shows only relative values but is exceedingly sensitive. It was found that the curve described by Winternitz does not regularly exist, but that there is a constant difference between the temperature of the two ears, the left one being invariably the warmer. This cannot be appreciated by the sluggish mercury thermometer, but only by the delicate instrument noted. It seems likely that the higher temperature may be associated with the greater activity manifested by the left half of the brain and the more active circulation of this region. The author concludes that further observations in this field may lead to a means for assisting in the localization of intracranial lesions.

Lithemic Nasopharyngitis Due to Systemic Disturbance.—Many cases of nasopharyngitis are due to a lithemic state, according to J. A. Stucky (*Jour. Am. Med. Ass'n,* October 15, 1904). An index of this condition is the presence of indican in the urine, with an excess of uric acid. Treatment should therefore be directed to the constitutional state and special attention be given to clearing out the gastro-intestinal tract. The patient is put on a restricted diet with plenty of water. Before the evening meal the colon is flushed out with several quarts of soap suds and on retiring, eight ounces of warm olive oil are injected high up into the rectum and allowed to remain. If there is much muscular tenderness or general malaise, strontium salicylate is given in ten-grain doses every two hours. Meats, sweets and salads are to be avoided, alcohol denied, water taken freely between meals, the skin kept active and exercise insisted upon.

Heredity and Treatment of Convergent Strabismus.—From a series of over 2,000 cases examined and 700 operations performed, during the past forty years, H. Cohn (*Berl. klin. Woch.,* October 22, 1904) presents the following recommendations: Up to the fourth year the healthy eye should be bandaged for several hours daily. During the fifth year, special exercises should be begun with convex lenses and the stereoscope. The total hyperopia should be constantly corrected. Operation should not be undertaken before the tenth year, and only in cases of extreme deformity should tenotomy be done during the sixth year. It is well not to promise a cure but only improvement. In severe cases the external oblique may be advanced. From the histories of 2,700 private patients, Cohen finds that in 23 per cent. of the cases some near relative was affected in a similar manner.

Rupture of the Ear Drum by Lightning.—A peculiar accident is recorded by K. Burkner (*Ber. klin. Woch.,* June 20, 1904), of actual laceration of the drum membrane by a bolt of lightning which struck a tower in which the patient in question happened to be. Examination of the ear showed an extensive tear in the membrane, part of which was folded over the handle of the malleus, and from the nature of the injury it was evident that it could not have been caused by the fall which the boy had. The truth of this conclusion

was shown by its contour, the slight amount of hemorrhage, the absence of symptoms referable to the labyrinth, and also by the fact that the only other injuries on the head were the burns caused by the flash. Very few cases of this kind have been recorded, and the author is doubtful whether the laceration was due to concussion or to the electric spark directly or to the shock attending the sudden discharge of electricity from the body. Healing took place and the boy's hearing was restored.

Inspection of the Antrum of Highmore.—It is confessedly true that the present means of differentiating antral disease give no information save as to the presence or absence of fluid in the cavity. A. Brown Kelly (*Lancet*, September 17, 1904) states that it is as illogical to treat antral disease in this blind fashion as it would be to attempt to manage otorrhea without examination of the ear. The method of opening the antrum is as follows: The gingivolabial fold beneath the canine fossa is painted with 20 per cent. solution of cocaine. Forty-six cubic millimeters of a 10 per cent. solution are then injected into this area. An incision is then carried through the fold for about two centimeters. By pushing up the soft tissues, the facial wall of the superior maxilla is easily exposed. A sharp trocar is then applied to this surface at a point about five millimeters in front of the zygomatic-alveolar ridge and about the same distance above the incision in the mucous membrane. The trocar is directed backward, upward and inward. The operation is often painless, although the bone section is not always so. If the incision is made as recommended, the small arterial twig, which is located immediately posterior to it, is avoided. Should this escape, the bleeding is unimportant. A trocar of good size should be used rather than a chisel, because the latter jars the patient's head. An ordinary aural or nasal speculum is then introduced into the opening. The end of this speculum should be beveled. Immediately on introducting this instrument the posterior wall of the antrum is seen. By inclining it from side to side, the entire cavity may be minutely inspected. The view of the inner wall of the antrum, seen as it is in perspective, is not good, and the osteum can rarely be made out. The condition of the lining membrane is of the utmost importance and should be carefully inspected. It is well, however, to postpone detail examination until twenty-four hours after, the wound being packed in the mean time with iodoform gauze. The pain is usually insignificant. The cheek may swell to a very considerable extent, so much so in fact, that the eyes may close. The author has opened over forty antra in this way without any serious consequences and with great advantage to the patient and with satisfaction to himself. As already intimated, the chief changes found in this series were lesions of the mucous membrane. Polypoid degeneration of this membrane was found in three cases while polypæ occurred in but one. It was a pedunculated multilobular polypus the size of a bean, which hung from the inner part of the roof and, curiously enough, was met by a similar growth twice as large which rose from the floor.

PRESCRIPTION HINTS.

Bronchopneumonia in Childhood.—It is necessary to estimate at the outset whether the disease is chiefly bronchiolitis, or if there is much consolidation, writes Douglas Stanley (*Birmingham Medical Review*, October, 1904). Also, whether it is due to an ordinary "cold," or part of a specific disease, or occurs in a debilitated or rachitic child. If it is chiefly bronchiolitis, there are two indications, viz., to prevent increase of the catarrhal process, and to free the tubules of obstruction. The child must be put to bed in an airy, cool room, on a diet of milk diluted with barley water or vichy, or, if older, on boiled bread and milk and such food. The following may be given every four hours:

℞ Vini ipecac. .....m v-x (0.35-0.7 c.c.)
Spiriti ammon. aromat....m v (0.35 c.c.)
Syrupi tolutani .....m v (0.35 c.c.)
Aquæ q.s. ad.....3 ii (8.0 c.c.)

After three or four days, if the child improves, the following may be substituted, given thrice daily:

℞ Vini ipecac .....m iii (0.2 c.c.)
Syrupi glycerophosphat ad .....3 i (4.0 c.c.)

If the case is of medium severity with fair consolidation, a pneumonia jacket should be applied and twenty minims (1.3 c.c.) of wine of ipecac given every seven to ten minutes till vomiting ensues, but not exceeding four doses. The following prescription is given every four hours:

℞ Vini ipecac. .....m v (0.35-0.7 c.c.)
Spt. ammon. aromat. } ..aa m x (0.7 c.c.)
Syr. senegal }
Syr. tolutani .....m xv (1.0 c.c.)
Aquæ q.s. ad. .....3 ii (8.0 c.c.)

If the bronchial element in the breath sounds is marked, ten minims (0.7 c.c.) of spt. ætheris nitrosi may be added with advantage. If in thirty-six hours there is no improvement, one minim (0.06 c.c.) of creosote may be added, and a warm solution of sodium bicarbonate used as a spray. For the very severe cases it is wise to put up a tent-bed and use a steam-kettle with eucalyptus or pine needle oil added. The former prescription may be increased by

℞ Strychninæ sulphat. .....gr. 1/50 (0.0012 gm.)
Spt. ætheris .....m xv (1.0 c.c.)

A cold pack may be necessary, cold affusions to face and chest, or it may be well to seat the child in a bath of hot water up to the waist. Pure brandy, m xv (1.0 c.c.) may be added to the milk and given every two hours. If the temperature is unusually high at the outset, tepid sponging and the following should be resorted to:

℞ Liquor ammon. acetat .....m xv (1.0 c.c.)
Spt. ætheris nitrosi.....m x (0.7 c.c.)
Ammon. bromid. .....gr. v (0.35 gm.)
Syrupi. .....m xx (1.3 c.c.)
Aquæ .....q.s. ad 3 ii (8.0 c.c.)

It is better to avoid aconite. If vomiting and diarrhea are disturbing, the milk may have to be replaced by whey or albumin water or cold chicken broth. Also may be given:

℞ Bism. salicylat. } .....aa gr. v (0.35 gm.)
Sodii bicarb }
Bism. subnitrat .....gr. x (0.7 gm.)
Chlorodyne .....m x (0.7 c.c.)
Pulv. tragacanthæ comp.....gr. xx (1.3 gm.)
Aquæ .....q.s. ad 3 iii (12.0 c.c.)

and Dover's powder, gr. ss to ii (0.03-0.12 gm.) may be added if thought advisable. Poultices should never be applied; they are often dangerous. Emphysema plays an important part in adding to the respiratory and cardiac embarrassment, and in such a condition oxygen may be of value. During convalescence cod-liver oil or the hypophosphites may be administered.

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COLLEGE GRADUATES IN MEDICINE.

YALE University has lately published some very elaborate studies concerning the careers of her graduates. It is conclusively shown, as far as this university is concerned, that a smaller proportion of her students become professional men than a century ago, but this proves nothing. We may safely say that a larger proportion of professional men exists in each community than ever before. The mere fact that a greater number of graduates enter business means only that a century ago a young man that was preparing for business thought a university training quite out of his line; and it was only the predestined professional man who thought of going to college.

The graduates who indulge in a financial career represent grandfathers who went without a college education; their presence at college does not alter their predestined relation to the business world. The statistics mean not that more college-bred men are choosing business instead of a profession, but that more business men are college bred than heretofore.

The statistical report on physicians is what interests us most. At Yale the lawyer is in the ascendant. Out of the living graduates of the university to-day thirty per cent. are lawyers, eight per cent. physicians and seven per cent. ministers. But either the physician is more successful financially than the lawyer and the minister, or else his calling is not so arduous, for whereas one out of ten of the living physicians who were Yale graduates have gone into business, nearly one-fourth of the ministers as well as the lawyers have given up their professional life for that of finance or teaching.

The minister's point of view is well discussed in the current issue of the *World's Work*, by Everett T. Tomlinson, in his article on "The Decline of the Ministry." He attributes this to the poverty of the minister, the petty and irritating work he is obliged to do in addition to, and to the detriment of his preaching, the lack of freedom in honest conviction and the degrading sense of being part of a "beneficiary system." Certainly the physician has none of these troubles to combat. He may be poor, but his income is not limited to a meager salary. He may be obliged to minister to petty and ignorant people, but they are not banded together with power to dismiss him from their conjoined service. His theories may be criticized, but they do not damn him, and when he sends out his bills he is much more apt to be aware of his position as a dispenser instead of a recipient of charity.

In fact, there has never been a time when the study of medicine has been so promising as it is at present. It is true that there are more doctors in a city block than can be comfortably maintained by the citizens thereof; but that is not the point. The study of medicine has passed the stage where its remuneration is confined to the practice of it. It has become fundamental in daily life. This is the era of preventive medicine and sanitation, of laboratory research and applied science. There are ten avenues with good remuneration open to the young physician to-day, where twenty years ago there was nothing but the house-to-house call and the clinic. The opportunity lies with the physicians themselves. There are tuberculosis sanitaria to be established all over the country. There are methods of inspection for contagious diseases in schools and factories, and great business houses to be established. There are tenement problems to be met. All these and many more have passed the first stage of charitable endeavor and sentimental interest. They have become as essential to civic life as is a corporation's legal counsel, and the

opportunity is open to the energetic young physician to broaden his professional horizon by bringing modern medical science into the city as well as into the household.

Again, there is over and above all this too much of genuine satisfaction in the study of medicine to permit of many desertions. The hand-to-hand conflict with disease is a stirring combat and the mental satisfaction of the new discoveries with the microscope and test tube lend a zest to living that is satisfying to a high type of mental culture.

THE ACID INTOXICATIONS.

By slow degrees and with much travail is nature delivering up the mysteries of her more involved chemical processes. While for many years we have written exhaustively on the oxidations and reductions that take place in the human body and of their relation to diseased states, it may be said that we are as yet only in touch with the earliest stages of the birth of correct ideas concerning these processes.

One type of perverted chemisms has been termed the acidoses, or acid intoxications, and the researches of Magnus Levy, Herter, Von Mering, Minkowski and others, have advanced to such a stage that they offer practical guides to treatment, particularly for the more flagrant or pronounced states of these forms of slow poisoning.

It is recognized that two important factors enter into the acid intoxications. Such acids may, in small part, be absorbed from the stomach from foods, etc., but these are of much less moment than the organic acids that are formed as the result of damage to the cells of the body whereby the ordinary products of metabolism are not properly oxidized. These oxidations, it is well established, are carried on particularly in the liver cells and in the muscles, but when these cells fail in their full duty organic acids, particularly diacetic and oxybutyric, are formed in comparatively large quantities, and as a result of their non-combustion, they eagerly seize upon the alkalies of the body cells and withdrawing these from the metabolic activities, set up a vicious cycle, whereby cell respiration is very much hampered. For, as it is well recognized, it is necessary for the blood to utilize the sodium of the body in combination with CO_2 to carry on its oxidation functions in the lungs. The sodium, having been largely seized upon by the organic acids, is not available for this most important work, and Pelion is heaped on Ossa to the ultimate causation of disease.

It is gradually becoming apparent that a number of causes bring about the primary increase in the formation of these acids, and an increasing number of affections of a milder or severer grade are being recognized as following in the train of these suboxidations.

As for internal metabolic causes, we are not yet in a position to assert just what are the starting points. Intense intestinal putrefaction is known to set free a series of bodies which cause an increase in the acetone bodies in the system, but those most open for research are found in drugs. Thus carbon monoxide is known to increase the acetone bodies, so also is phlorhizin, which drug induces a type of glycosuria of more than passing experimental interest. From another viewpoint adrenalin brings about a glycosuria, as do also chloroform, ether, antipyrin, morphine, atropine and others.

The exact steps in the process of acid formations by these bodies is not yet outlined, but they each and all are opening up new lines of approach to the solution of the first cause.

The results of these intoxications we have always with us. Some, like arthritis deformans of the non-infectious type, defy all efforts at analysis, and we are compelled to fall back on a hereditary nervous defect, which is hair trigger, as it were, to this type of acid intoxication to account for the trophic disturbances in the joints.

It seems not improbable from general research that the cyclic vomiting of children, the vomiting of pregnancy, and eclampsia, have as one of their etiological factors at least the overproduction of these organic acids, while in diabetes, the classical extreme of complete acid intoxication, is met with.

While the general procedures of the therapeusis of these conditions are only vaguely outlined by the slow accumulation of a rational understanding of the morbid processes themselves, it is not too visionary to hope for much relief in the near future.

For the most pronounced of these diseases, diabetes, the general rationale is now fairly clearly perceived, but it begins unfortunately only after the disease has become established. The knowledge that will lead to the possible prevention of diabetes still is hidden.

Alkalies, to replace the used sodium bases,

careful intestinal hygiene, particularly limiting excessive putrefaction, a diet not too restricted, especially not as to water, but one sparing in fats and carbohydrates, a partial removal of the ban on proteids, and an annihilation of the doctrines founded on the fancied differences in red meats and white meats, these, combined with an open-air occupation, involving mild exercise in a carefully selected equable climate, are the main features of the therapeusis not only for diabetes mellitus, but for practically all of the acidoses.

PNEUMOCOCCUS PERITONITIS.

A WIDER knowledge of this very serious and as yet comparatively little known sequel, of pneumonia, is evidently much to be desired.

Frank S. Matthews, in a leading article (*Annals of Surgery*, November, 1904) states that in all, 106 cases have been reported. He believes, however, that because of the difficulty of positively establishing the diagnosis, and in large measure because of the neglect with which the subject has been treated, a great many cases have not been recognized.

For this reason and because of the fact that the pneumococcus in its multifarious clinical manifestations, seems to be particularly active, and, if we are to give credence to the Board of Health reports, to be markedly and almost epidemically on the increase, the season is timely to draw the attention of the general practitioner to the clinical manifestation of this interesting pathological entity.

Acknowledging further indebtedness to the article already referred to, it may be stated that the lesion is probably three times as frequent in children as in adults. As to the sex, a most remarkable and as yet unexplained relation exists, viz.: Under fifteen years of age it is seven times as frequent in girls as in boys; over fifteen years of age the two sexes are equally affected. This would seem to show that the establishment of the menstrual function had something to do in safeguarding the female. How or why is as yet a matter of conjecture. It would seem to the casual observer that before further explanation for this most extraordinary ratio be sought, efforts should be made to determine that the ratio itself is not one of those interesting vagaries of figures. This, particularly, because the statistics upon which it is based have their foundation on a very small number of cases.

The pathological anatomy is very similar to that of pneumococcus empyema. The exudate is characteristically odorless, highly fibrinous, of a greenish-yellow color and varying very markedly in its consistency.

One very favorable factor in the distribution and localization of this lesion lies in the marked tendency shown by the exudate to localize itself either in the pelvis or in the hypogastrium. This, naturally, militates very much in favor of the patient, because, as is well known, the pelvic peritoneum can better take care of bacterial toxins than any other portion of the sac, and, further, the "walling off" of the process in the region of the umbilicus has, in unrecognized cases, enabled the abdominal walls to part at the point of least resistance, viz., the umbilicus, and allow the spontaneous discharge of the abscess. In most of the reported cases it is of uncommon interest to note that the peritonitis has not been secondary so far as observations went to pneumococcus invasion elsewhere, a least of a demonstrable type.

The clinical picture is, in a measure, characteristic, and typically presents three stages. The first is manifested by tenderness and distention, accompanied by pronounced fever and vomiting. The muscular rigidity and other symptoms are not so marked as in other types of peritonitis. Within a few days the second stage manifests itself by a cessation of the vomiting and a return of the temperature to normal. The patient, as a consequence, looks better, and the attendant is prone to be thrown off his guard. Diarrhea, as a rule, develops in this stage. In a subacute, but relatively rapid manner, the increase of the exudate, however, takes place, the temperature within a few days rises, a tense cystic mass appears in the hypogastrium; there are chills, cachexia, weakness and every other symptom of general invasion and death is almost certain to subvene unless the abscess is opened or spontaneously evacuates itself.

The differential diagnosis of the disease in its later stages is somewhat difficult, unless the characteristic symptoms have been carefuly watched, and, it may be said, unless they have been present. As in many other lesions, typical symptoms do not appear at all. The first stage may necessitate the question being answered whether or not the peritonitis exists at all. This is particularly true of the form of infection under consideration, because paresis of the intestines is rare, and, moreover, because pain and distention are

not necessarily marked. In the second stage, with its diarrhea and slight distention, the clinical signs are not unlike those of typhoid. The terminal stages of the disease simulate tuberculous peritonitis.

Jensen (*Archiv für klinische Chirurgie*, 1903, lxx, 91), states that the source of the infection is not unlike that attributable to other types of invasion, viz., through a wound; through the diaphragm; through the genitals; through the intestinal tract; through the blood; from pneumococcic foci in the abdominal organs. It is interesting that the transportation of bacteria from the lungs through the diaphragm, in case of pneumococcus peritonitis following a lobar pneumonia, unless it takes place indirectly through blood infection, must be brought about by retrograde transportation through the lymphatics. So far as genital infection goes, the phenomenal frequency of the disease in girls has naturally suggested that the germs find their way to the peritoneum by way of the tubes. Nevertheless, salpingitis of a pneumococcus type is extremely rare and has not as yet been reported except in adults.

During the well-marked epidemic of lobar pneumonia, which this city experienced last year, at least one case of this pneumococcus peritonitis developed as a sequel. No less an authority than Janeway considered the diagnosis of pneumococcus peritonitis correct, and, indeed, the pneumococcus was found imbedded in the fibrillar meshes of the exudate. This finding was made and reported from the Cornell Laboratory by Thomas W. Hastings. It is not uninteresting to note, however, that Dr. Hastings was unable to obtain the germ by culture methods. This corresponds with the findings as reported by Matthews, that Netter in 140 cases of peritonitis bacteriologically examined found the pneumococcus but twice.

A point of dissimilarity, however, between the case under consideration and those reported by Matthews, lay in the fact that the exudate was not alone not localized, but was present in extraordinary quantities—nearly eight quarts was removed by trocar. Throughout Matthews's article, he speaks of the exudate being purulent. That it may be distinctly serous and, indeed, have many of the characteristics of a transudate, is not to be doubted, although confessedly the cases presenting this type of what might be called peritoneal pneumococcus hydrops are rare.

The treatment of cases distinctly associated with purulent exudate is, of course, self-evident. Those, however, which from the onset simulate in the later stages of the disease as described by Matthews, tuberculous peritonitis of the so-called wet type, are certainly *sub judice* in the matter of treatment.

It is generally agreed that free incision and exposure to the air with or without drainage will do much toward curing this form of tuberculous peritonitis. When pneumococcus peritonitis develops, as it may do, either without the initial stages described by Matthews, or else passes through them at so rapid a rate that they are not recognized, the most natural question which the practitioner has to ask himself, is whether to relieve the distention by puncture or by open incision. This is confessedly a difficult question to answer, since it is not yet known why abdominal section is curative in the case of the tuberculous infection. From a very limited experience, it may be justifiable to urge puncture and aspiration patiently repeated until this treatment is shown by the increasing rate of fluid collection, to be unavailing. This conservative method has, in the past, proved successful.

ECHOES AND NEWS.

NEW YORK.

New York Academy of Medicine.—At the annual election, held Thursday, December 15, the following officers were elected: Charles Loomis Dana, President; T. Mitchell Prudden, Vice-President; Abraham Jacobi, Trustee; Reginald H. Sayre, Treasurer of Board of Trustees; William C. Lusk, Committee on Admissions; L. Emmet Holt, Committee on Library; David Boyaird, Jr., James Ewing, Charles L. Gibson, Homer W. Gibney and Edward L. Keyes, Jr., Delegates to State Medical Society.

Lecture by Dr. Flexner.—Dr. Christian A. Herter has announced to his class at the College of Physicians and Surgeons, that Dr. Simon Flexner, of Johns Hopkins, will lecture at the College during the present month on "The Action of Snake Venom." Owing to the large number of students who desire to attend, the lecture room cannot be opened to the profession, but an abstract will be printed in the Medical News in the issue following the lecture.

No Mid-Year Examinations at P. and S.—Contrary to the usual custom, no examinations will be held at the College of Physicians and Surgeons at the end of the first half year. This was decided upon at a Faculty meeting held last May and has just been made public. The reason given is that students neglect clinics and other college work during the mid-year to study, and thus for about a week the benches are empty, which interferes seriously with courses given by certain professors. The students are circulating a petition to have the measure annulled and are supported in their effort by a few of the Faculty who wish the old régime continued.

City's Power to Protect Itself.—Much depends, writes the New York *Sun*, on the opinion of the Corporation Counsel on the question propounded to him by Health Commissioner Darlington, concerning his right to revoke the license of a milk distributing firm in this city which has been selling impure milk. The city should certainly have this power to protect itself, for experience has shown that fines are not a preventive of fraud. The large dealers who find big profits in adulteration pay without protest fines of $500 and go right on with their old methods. Dr. Darlington reports the case of one large concern whose head he has haled to court four times and had fined $500. The concern still does business. Now the Commissioner has gone after the dairies, where, after all, the beginning of the evil lies. The results of some of the first inspections have been startling. Flagrant violations of the sanitary laws have been found in large dairies right at our door. In several cases the cows were seen to be milked in filthy stables, and to counteract the impurities that thus got into the milk formaldehyde was used freely. At certain creameries men were found mixing yellow coloring matter in the cream before bottling it. These were cases where the milk was later handled by "high class" dealers, and if such a product is distributed at high prices, what must lesser charges bring the consumer? If the Commissioner has a right to bar the milk of such concerns from the city, the frauds will readily be prevented. If the law does not now give him the right to revoke the licenses of dealers participating in such frauds, it should be amended to do so.

PHILADELPHIA.

Blockley Physicians' Banquet.—The eighteenth annual dinner of the Association of ex-President and Resident Physicians of the Philadelphia Hospital, was held at the Bellevue-Stratford, December 6. Drs. H. C. Wood, D. J. McCarthy, E. M. Welty, G. M. Guthrie and H. B. Calhoun, spoke to toasts. Dr. E. L. Duer is President of the Association.

Site Secured for Cancer Hospital.—The American Oncologic Hospital has secured the lease of property at Forty-fifth and Chestnut streets, the intention being eventually to buy it. Drs. A. Hewson, G. B. Massey and H. R. Swayne have been appointed on the medical staff.

Mont Alto Sanatorium.—The Mont Alto Sanatorium for Consumptives, on the State Forestry Reservation in Franklin County, established at a cost of $8,000, has a record of 66 per cent. of the 80 patients cured or recovered sufficiently to leave the camp. The legislature is to be asked for $50,000 to erect new buildings for increasing the capacity from 30 to 75 patients.

Dr. Ashton Goes to the University.—Dr. Thomas G. Ashton, formerly connected with the Jefferson Medical College, has been elected adjunct professor of medicine in the University of Pennsylvania. Dr. Ashton is one of the most prominent of the younger teachers of medicine in this city. Early in the present year he was chosen Professor of Clinical Medicine in the Philadelphia Polyclinic and also a manager of the hospital of the University. He is visiting physician to several hospitals.

The Relation of Food Preservatives to the Public Health.—Dr. Victor C. Vaughan, of Ann Arbor, Mich., addressed the Pathological Society of Philadelphia, on the above subject, December 8. The discussion was opened by Dr. Charles Harrington, of Boston, and Prof. C. B. Cochran, of West Chester. Dr. Vaughan prefaced his remarks by a consideration of the general principles of food preservatives, stating that they have been used since prehistoric times. He said that in deciding whether a certain preservative or preservatives in general are to be allowed, people suffering from disease, as well as the healthy ones, are to be considered. The aged and infants are also to be remembered, especially unhealthy infants. To be legally sanctioned, preservatives must be innocuous to all these groups.

Preservatives that Do Not Preserve.—Dr. Vaughan said that many questions regarding the use of preservatives would be settled if it were decided what substances are real preservatives and what are preservatives in name only. A material put into a food to maintain a color or to impart to it another color is not a real preservative, nor is one that only prevents the appearance of a disagreeable odor a real preservative is one that prevents the growth of deleterious bacteria. In experimenting with the lactic acid bacillus he has found that formaldehyde in strength as low as 1 to 50,000 will hinder its growth in such a manner as to prevent milk souring but it has little or no effect on colon bacilli. If the latter are present in milk, the formaldhyde is a source of danger in that it may be responsible for a false sense of security. A mother would never give sour milk to a child, but if the formaldehyde prevents its souring she will give it though it contain other bacteria. This was likened to an obstructed street at night with its red lantern; the danger signal is taken down by the so-called preservative but the obstruction still remains. Sodium sulphite may be of the same order; there is need of investigation of numerous substances along this line.

Regulation of Poisonous Preservatives.—Experts differ as to what constitutes a poison but Dr. Vaughan designates as a poison any substance which chemically destroys cells or impairs their function. These substances should be permitted as preservatives only under the most careful regulation by law. Their secret use, even in quantities much below what would be considered a poisonous dose, is not permissible. Any person who chooses should not be allowed to put poisons in our daily food when physicians are the only ones allowed by law to administer poison to other individuals. Druggists and physicians are regulated by law in handling poisons; why not regulate their employment in foods? Certain poisons are good preservatives for certain foods at proper times but this must be known by all who eat those foods. The three requisites of a preservative are: (1) It must be a real preservative; (2) in comparatively large quantities it must not materially impair the digestive and allied functions; (3) it must not be a cell poison or else be added only under legislative restrictions by persons authorized to do so and the food containing it must be so labeled.

Ventilation of Railway Cars.—The Pennsylvania Railroad Company has, after a period of experimentation, adopted a device for ventilating its passenger coaches which promises to do away, not only with bad air, but also with the overheating and underheating of the cars—three evils from which every traveler has at some time or other suffered. The description of the device indicates that there is about it nothing that is severely complex. Outside air is brought into the car through hoods covered with wire gauze to exclude cinders, passed through vertical downtakes to a space under the floor, whence it is driven into the heater boxes and warmed by the

radiators. From the heater boxes the air passes into the car proper at points in the main aisle, performs its mission and is allowed to escape through the ventilators which are provided with the necessary suction to aid the circulation of air. When all the ventilators are open, 60,000 cubic feet of fresh air is provided per hour. In a day coach this would give each passenger approximately 1,000 cubic feet of fresh air, or fifteen complete changes of air every hour. In a Pullman sleeper, the amount per passenger would be much greater. There is also a method of compensating for the difference of conditions when the car is in motion and when it is not. The tests on the Pennsylvania have been so satisfactory that several hundred cars have already been equipped with the device. If all that is claimed for the system is true, its general adoption, it would seem, cannot long be delayed, for the things that it is said to accomplish are parts of a reform long needed.

CHICAGO.

Work of the Medicolegal Committee of the Chicago Medical Society.—This Committee, during the two years of its existence, has learned several facts. The first of these is that no circumstance is too trivial to form the basis of a damage suit. For example, a member of the Society is being sued at the present time on the following facts: A child of about a year had an ordinary bronchitis or bronchopneumonia. It was not especially sick. He saw it about five or seven times in a week or ten days. He was told that the child was better, and that he need not call any more. Another physician attended it for about a week. By that time the child was well. The first doctor tried to collect his bill. The parents resisted, suing him for $10,000 damages. The child is well and always has been, except for that two weeks. Another example: A doctor attended a child in 1900. He sued for his bill. The employer of the father told him that he must pay the bill or be fired, or justify himself in a refusal to pay. It costs $10 to the lawyer to start a suit, so one was started. This is 1904, nearly 1905; the man has not paid the bill, nor been fired. The second point that the Committee has learned is that it is not the wealthy, conspicuous doctor who is sued, as a rule. The Committee has found that nearly all suits are entered as a means of resisting a physician's bill in the hope of a compromise, and nulling the bill, paying the lawyer, and perhaps getting $25 or $50 for the party suing. As would be expected, they seldom go after a man unless they think he can be bluffed. A man who has large means or large influence is seldom menaced. They are especially prone to go after the younger men. The next thing the Committee noticed is that there is fashion in damage suits. A few years ago the fashion ran to fractures and dislocations. Now it runs to diseases of women and children, including the conduct of labor. The prevailing fee for obstetrical service and after-care is so very small in certain parts of the city that the physician is mentally compared with the midwife. Therefore, when he fails to devote all of his time to a case for a certain while, he is very liable to be sued for negligence. It is very apparent to the Committee that the damage suit laws should be amended. Any man, with or without apparent cause, can get another man to put up $10 for the cost of a suit. The entering of a suit and the advertising given it does some man, whose reputation in his capital, great damage, yet he has no recourse. This is the only country in the world that does not require an indemnifying bond as a condition for instituting suit.

Evidence of Impurities in Prescriptions.—The State Board of Pharmacy is about to prosecute more than one hundred druggists of Chicago for selling adulterated drugs. The evidence has been procured and chemical tests have been made which prove the presence of alien matter in the prescriptions which called for pure drugs.

Coroner's Report for the Year Ended November 30.—The total number of deaths investigated during the year was 5,960, and 3,821 inquests were held. In causes of death fire heads the list with the Iroquois loss of 575 lives. There were 426 suicides, and 382 met death in railroad accidents. Of the suicides, 103 were between forty and fifty years of age.

Insane and Paupers.—The annual report of the Detention Hospital shows that the total number of patients admitted during the year was 1,604. Superintendent Podstata, of the Dunning Institutions, reports that the improvements in the way of new buildings have been of inestimable benefit; that the farm has realized substantial revenues, and many novel features have been provided for the patients. The average daily number in the insane department has been 1,780, and at the Poor House, 1,160. The total cost of maintenance has been $376,442.

County Hospital.—Warden Happel, of the County Hospital, reports that valuable additions in the way of service and buildings have been provided. During the year 22,301 patients have been treated at the Cook County Hospital. The total cost of maintenance was $329,268.96.

Report of Chicago Lying-In Institution and Dispensary.—"Three thousand, nine hundred and ninety-nine babies, born in the homes of the poor, within seven years, without one mother's death." This is the record of which the directors, officials and obstetricians of the Chicago Lying-in Hospital and Dispensary are proud. They believe it to be unequaled in the history of maternity hospitals, the world over. This institution and dispensary was established in 1895. Since that time 5,800 cases have been cared for. During that period of nine years only three deaths have occurred. Of 700 cases treated at the hospital itself only one has been lost in spite of the fact that many desperate cases were received. In this quarter of the city from five hundred to one thousand cases should be cared for yearly, and the officials at the hospital are endeavoring to raise $12,000 for the erection of a suitable dispensary.

Work of Children's Hospital Under Consideration.—A recent announcement was made that approximately $100,000 already had been subscribed for the construction of the Children's Memorial Hospital, which will cost $300,000. As the hospital is to be built on the pavilion plan, one section at a time, it is probable that work will begin soon. The nucleus of the new institution will be the Maurice Porter Memorial Hospital for Children. Mrs. Julia F. Porter founded the institution in 1882, as a memorial to her son. Mrs. Porter will give $75,000 toward the new institution, and another gift of $20,000 is in hand, with many smaller subscriptions. An endowment in perpetuity requires $5,000; for a year, $250; and during one life, $3,000.

Reappointment of Dr. Podstata.—Dr. V. H. Podstata has been reappointed superintendent of the County Institutions at Dunning; Dr. H. I. Davis has

been appointed County Physician, and Dr. Henry G. W. Reinhardt has been appointed Assistant Coroner's Physician.

New Hospital.—The design of Richard E. Schmidt has been accepted for the new Michael Reese Hospital, which is to cost about $400,000. The new hospital will be a six-story fireproof structure.

Appointment of Dr. Howard.—Dr. Henry William Howard has been appointed Secretary to the Surgeon-General, with the rank of first lieutenant and assistant surgeon.

Rock Island System Surgical Association.—The second meeting of this Association was held in the Assembly Hall of the Northwestern University Building, December 7 and 8. There were approximately 150 railway surgeons in attendance, and papers were read and discussed as follows: "Our Association," by Dr. T. B. Bradford, Cotton Plant, Ark.; "Two Seemingly Hopeless Cases," by Dr. W. F. Fee, Meade, Kan.; "Traumatic Laceration of Urethra; Resection and Bone Suture for Ununited Fracture of Ulna and Radius," by Dr. H. A. Leipziger, Burlington, Iowa; "Burns and Scalds," by Dr. R. P. Tye, of Chickasha, I. T.; "Is the Present System of First Aid to the Injured, as Practised in the U. S. Regular Army Applicable in Railroad Work?" by Dr. F. H. Clarke, El Reno, O. T.; "Infected Wounds," by Dr. J. A. Finlayson, of Armstrong, Iowa; "First Treatment of Eye Injuries," by Dr. R. S. Magee, of Topeka, Kan.; "Embolism of the Popliteal Artery, with Report of Three Cases," by Dr. E. W. Clark, Grinnell, Iowa; "Pupil Reactions and Field of Vision in Examination of Railway Employees," by Dr. W. C. Bane, Denver, Col.; "Punctured Wounds, with Report of an Unusual Case," by Dr. C. B. Kimball, West Liberty, Iowa; "Street Railway Surgery," by Dr. A. O. Williams, Ottumwa, Iowa; "A Queer Case of Malingering," by Dr. Geo. P. Hanawalt, Des Moines, Iowa; "Injuries to the Deep Muscles of the Back, with Report of Cases," by Dr. M. W. Bacon, Englewood, Ill.; "The Local Surgeon, his Duty to the Injured and his Duty to the Railway Company," by Dr. G. A. Spaulding, Avoca, Iowa; "Hysteria: Can it be Traumatic?" by Dr. L. W. Littig, Iowa City, Iowa; "The History of the Shield Dressing for Injured Eyes," by Dr. H. Gifford, Omaha, Neb.; "The Treatment of Sciatic Rheumatism with Solution of Osmic Acid," by Dr. S. V. Hall, Rock Island, Ill.; "Extensive Necrosis of Frontal Bone Following Slight Injury," by Dr. G. E. Hartshorne, South McAlester, I. T.; "Compound Comminuted Fractures of the Leg with Reports of Three Cases," by Dr. D. I. Christopher, Colorado Springs, Col.; "Dressing Compound Fractures," by J. V. Brann, Knoxville, Iowa. Delegates were appointed to the American Association of Railroad Surgeons. In the afternoon of the second day, Professor Weller Van Hook gave a surgical clinic at the Wesley Hospital. He operated on and exhibited several interesting surgical cases, making running comments on each as to the methods pursued and after-treatment. Dr. Van Hook was tendered a rising vote of thanks for his entertaining and instructive clinic.

GENERAL.

German Birthrate.—Official statistics covering twenty-six years show a steady and noticeable decrease in the birthrate in the large cities in Germany, in spite of the fact that the marriage rate is higher than in cities of less than one hundred thousand inhabitants and in the country. Berlin, which passed the two million mark in December, presents the heaviest decrease in the birthrate. In the period from 1896 to 1900, it averaged 28.9, against 44.9 from 1875 to 1880. The highest birthrate is in the great industrial centers of the Rhenish provinces.

Proposed Memorial to Dr. Osler.—The first organized movement to consider the proposed memorial to Dr. Osler, who will leave here in June to take up his residence in England as regius professor of medicine at Oxford University, took place last week at a meeting of the Baltimore City Medical Society. The plan is to erect a library building in some suitable location in Baltimore, costing about $100,000. The sum of $10,000 has already been contributed in Baltimore, and committees have been formed in Philadelphia and Cleveland for the purpose of raising money. Dr. John H. Musser, professor of clinical medicine at the University of Pennsylvania, has consented to be chairman of the national committee now being formed. The national treasurer will be Gov. Warfield, of Maryland, and Dr. Henry Barton Jacobs will be secretary.

Dr. Osler's Successor.—It was learned last week, writes the Baltimore *Sun*, that the trustees of the Johns Hopkins University and the advisory board of the medical faculty of the institution are now strongly inclining to the appointment of Dr. Lewellys Franklin Barker, professor and head of the Department of Anatomy in the Rush Medical College of the University of Chicago, and formerly of the Johns Hopkins University, as the successor of Dr. William Osler, who leaves Baltimore next spring to become regius professor of medicine in the University of Oxford. While the name of Dr. Barker has been previously mentioned among a number of others as a probable successor to Dr. Osler, it now seems that the appointment of Dr. Barker has become the most favorable one in the eyes of the most important members of the Johns Hopkins Medical Faculty, who will virtually decide upon the final choice. It has ever been the policy of the Johns Hopkins University to endeavor to secure as the heads of departments men of extraordinary genius, without respect to age, the principal qualification being a reputation for ability in original scientific research work and investigation, and it is for this qualification that Dr. Barker commends himself so favorably to the authorities of the institution.

Although a young man, only thirty-seven years old, Dr. Barker's career has been a brilliant one, and he stands to-day among the foremost anatomists of the country, and is ranked as an authority among such prominent men as Prof. Franklin P. Mall, of the Johns Hopkins Medical School. In his course of work at the Johns Hopkins University from 1891 to 1900, during which time he held a number of positions, his work was stamped as extremely brilliant and in such investigations as his services upon the Johns Hopkins Medical Commission to the Philippines, he won the admiration of scientific men throughout the country.

Dr. Barker is a Canadian—a native of Norwich, Ont. He received much of his education at Canadian institutions and his medical degree at the University of Toronto. Dr. Barker was house officer of the Toronto General Hospital, 1890-1891, assistant physician of the Johns Hopkins Hospital 1891-1892, Fellow-in Pathology in the John Hopkins University, 1892-1894, associate in anatomy, 1894-1897, associate professor of anatomy, 1897-1899. In 1899 he was a member of the Johns Hopkins Medical Commission to the Philippines, and in 1901 a member of the special

commission appointed to determine the existence or non-existence of the plague in San Francisco. He is the author of a number of medical and anatomical treatises. While there are a number of other men suggested to succeed Dr. Osler, Dr. Barker is said to be nearer the type of scholar desired, and that he will be the favored one to be chosen. The advisory board, which virtually makes the choice, is composed of President Ira Remsen, Dr. Osler, Dr. William H. Welch, Dr. H. M. Hurd, Dr. H. S. Kelly, Dr. W. K. Brooks, Dr. W. S. Halstead, Dr. J. J. Abel, Dr. W. H. Howell, Dr. F. P. Mall and Dr. J. Whitridge Williams.

Aesculapian Club.—The Aesculapian Club, of Boston, held its winter meeting at the Medical Library, Thursday, December 8. Dr. T. C. Munro and Dr. E. H. Bradford were the guests and speakers of the evening. This Society, founded in 1902, takes in annually from the graduating class of the Harvard Medical School eighteen members, forming a new "chapter" with separate organizations and meetings. The club, as a whole, has two meetings a year. The object of the club is "to encourage in its members a spirit of emulation in medical work, and to promote a permanent active interest in the affairs of the Harvard Medical School;" in addition to this there is a social side to its meetings which render them besides instructive very enjoyable. At the last meeting Dr. Munro gave a most entertaining talk on the Mayo Brothers, of Rochester, Minn., and Dr. Bradford on "The Future of the New Harvard Medical School."

Clever "Hans" now a Telepathist or Muscle Reader.—Some time ago the fame of a horse named "Clever Hans" spread over the newspaper world. Hans spelled out names, told the time, did simple sums in arithmetic and had other attainments which caused him to be seriously credited with reasoning powers on a scale never before reached in the horse world. A scientific commission which was appointed to investigate the stories of the animal's wonderful performances has made a report in which it says that Hans is unable to count or read a sum. It was demonstrated that he was unable to answer a question unless the question was known to one of the bystanders. He was likewise unable to answer when blindfolded. The commission concludes that the horse requires optical assistance, but adds that it does not follow that the assistance must be knowingly given. The commission believes that the horse has been so perfectly trained as to be able to recognize the slightest change in bodily position, which is a natural consequence of the trainer's course of thought. One commissioner declared that the horse was able by careful watching of the owner to recognize the slightest movement which was unknown to the owner himself, the latter serving as a communicating medium to the horse's intelligence.

Boston's Great Opportunity.—That $5,500,000 of the estate of Peter Bent Brigham, who died in 1877, can be used to found a hospital in this city for indigent persons, was the decision of Judges Putnam, Aldrich and Brown in the United States Circuit Court of Appeals to-day. The money has been turned over by the Brigham executors to the Peter Bent Brigham Hospital Corporation, which was organized in pursuance of the terms of Mr. Brigham's will. Herbert F. Brigham, one of the heirs, brought a bill in equity to recover his alleged share of the vast estate, upon the ground that the gift for the hospital was void, as being in violation of the rule against perpetuities, as it was the intent of the will that the gift should vest at a time beyond the life or lives of persons living when the testator died and twenty-one years after. The plaintiff also held that the amount of the gift beyond $1,500,000 was distributable among the relatives of Mr. Brigham upon the ground that by the general laws of Massachusetts a corporation such as the hospital had no legal power to hold more than $1,500,000 in property. Mr. Brigham's will directed that the residue of his estate should be "held, managed and invested" by his executors "for the term of twenty-five years from the time of his decease." The executors were to pay certain annuities, and to add the surplus income to the principal, and at the expiration of the twenty-five years they should dispose of the fund to found a hospital in Boston, to be called the Brigham Hospital, for the care of persons in indigent circumstances.

Ohio State Sanatorium for Tuberculosis.—The Ohio State Sanatorium Commission at a recent meeting adopted the following minimum requirements for a site for the proposed hospital for tuberculosis: (1) It shall include not less than 350 acres of land. (2) A portion of this land shall be not less than 800 feet above sea level. (3) A certain part of it must be timbered. (4) The land must afford a suitable site for buildings, sloping south, south-southeast or south-southwest; and be well sheltered from prevailing winter winds. It must also offer a pleasing landscape. (5) The soil must be dry, pure, easily drained, and at least 100 acres shall have good agricultural qualities. (6) An abundant supply of pure water shall be easily accessible. (7) The site must be not more than three miles from a railway station, and not less than one mile from any city or village. (8) It must afford good railroad facilities and be easily accessible from any part of the State. The chart on preceding page is taken from the report of the State Tuberculosis Commission, published the first of the year. This shows roughly the sections of Ohio that are over and those below 1,000 feet in elevation, and in addition some of the small areas that are above 1,200 feet. Less than one square mile is over 1,500 feet above sea-level. This is in west-central Logan County, near Bellefontaine, where one hill rises to 1,540 feet and another to 1,525 feet. At least one-fourth of the State is above 1,000 feet. Of this it is estimated that about 4,000 square miles is in the western half and the balance in the eastern. There are extensive areas in the eastern section rising from 1,200 to 1,300 feet above sea-level. The area of the State is 40,760 square miles, and it is estimated that only 460 square miles is below 500 feet. The lowest point is about 425 feet above mean tide. The mean elevation is probably slightly above 850 feet.

Needs of the Naval Medical Corps.—It appears from the report of Secretary Morton that the Medical Corps of the navy is the only branch of the service in which there are vacancies at the foot of the list comments the New York *Sun*. These have existed for some time, and how to fill them is a difficult problem. There are plenty of applicants for appointments, but their general quality is not what is desired, as is shown by the facts that of ninety-seven physicians who sought admission to the navy last year only twenty-three received commissions as assistant surgeons. The standard set is high. To qualify for the examinations the candidates must not only be graduates of a high-grade medical school, but must have had one year of professional work. But even those who fill these re-

quirements, while equipped for ordinary practice, have, as a rule, no knowledge of the special problems with which they are likely to be confronted in the service. To overcome this difficulty a naval medical school was established three years ago, which gives a six months' course and turns out men well fitted for active duty. Last March it graduated thirty officers and twenty-four are now under instruction. The increasing number of vessels in the navy has increased the demands on the Medical Corps. The difficulty of securing good men is not a new one and from year to year there has been much talk of a remedy, but nothing effective has been done. Surgeon-General Rixey, in his report for the year, emphasizes the needs of his corps and devotes much space to a discussion of its unfilled list. He says that the board of examiners has sat almost continuously, lectures on the naval service have been delivered in the leading schools—in fact, everything possible has been done to get enough high-class men to fill the vacancies, and still the men are needed. "It was thought," says Dr. Rixey, "that the favorable legislation of 1903, giving rank of grade and increasing the number of surgeons and establishing a closer parallelism between the army and navy medical establishments, would so serve to popularize the naval medical service among qualified young professional men as to make recruiting for it an easy matter." But here, too, were disappointing results. The Army Medical Corps is full and continues to draw to it an excellent class of candidates. So it is with the Marine Hospital Service. The medical journals explain this partly by pointing out that the pay of an assistant surgeon of the navy when ashore is 15 per cent. less than that of an assistant surgeon of the army. Again, it is insinuated that the line of the navy has not entirely lived down its old reputation for treating the medical officers ungraciously; that while this reputation is unwarranted, it still exists and exercises a repellant influence. The wars of the last few years, with the one now being waged in Manchuria, have peculiarly emphasized the necessity of the most efficient possible medical corps in both branches of the service, and Congress should by legislation support the efforts of the Secretary and Surgeon-General to secure for the navy a full and efficient medical staff.

Boston Medical Library Society.—The third of the Boston Medical Library meetings held in conjunction with the Suffolk District Branch of the Massachusetts Medical Society, was held Wednesday evening, December 7, at the Library. The subject for discussion was "The Humane Treatment of Malignant Disease from a Surgical Point of View." The paper of the evening was given by Dr. John C. Munro. Dr. Munro made an earnest and eloquent appeal to the medical man and to the general practitioner to get in a surgeon earlier than heretofore before it was too late, and to allow the patient some choice at least in the matter of an operation, whether or not an absolute cure were possible. What might have happened without an operation can never be told but there was always the possibility of making a wrong diagnosis, no matter what the signs were, and a condition no matter how hopelessly malignant it appears, might prove to be benign and quite capable of cure. Case after case was cited to show this, where an apparently hopeless operation had been done merely to alleviate pain and a benign condition found. He maintained that until diagnosis of incurable malignant disease could be definitely and surely made it was safer to operate, after, of course, all other means had been exhausted. To operate when there was a chance to cure the patient without one, he said, was wrong; but to oppose an operation and to allow the patient to die when there was a $^1/_{1000}$ chance of cure was far worse. He next spoke on operations to alleviate suffering, citing cases not of cure but of a happy and comfortable existence for months and years afterward, the patient finally dying of a general toxemia and not of some painful local process. All cases were not fulminating ones, and it was possible to tell to what extent relief might be given. He dwelt especially on the added mental comfort to the patient after an operation and asked why, if all external tumors are immediately handed over to the surgeon, internal ones as well should not be, especially as now in experienced hands the dangers of a laparotomy were so slight.

Dr. R. H. Fitz spoke confining himself to malignant diseases of the stomach. His paper was brief being composed largely of statistics from an article recently published by Dr. Munro, in which the speaker showed that the mortality on so-called exploratory operations of the stomach was very high indeed.

Dr. David Cheever, while admitting that only in rare cases of operating on advanced malignant disease is a cure possible, yet the mental effect on the patient and the relief of suffering makes such operations desirable.

Dr. A. T. Cabot thought that a certain amount of danger to the patient's life was quite justifiable if there was a chance, however small, of marked relief or cure.

Dr. Fred. Lund cited cases illustrative of this same subject in which, while there was no cure, yet there was a very great relief from pain.

Dr. Francis Williams spoke of X-ray treatment as a palliative measure and explained a new device whereby by means of special tubes and plates of aluminum treatment could be given to far deeper growths than possible at present without danger of severe burns.

Dr. H. L. Burrill spoke of the indefiniteness of the term "malignant." He advised leaving the diagnosis to the surgeon if there was any chance of doubt.

Dr. F. B. Harrington thought an early operation really cured in more cases than generally thought and that, owing to the spreading abroad of this fact patients were coming in for treatment much earlier than formerly.

Panama Canal Service.—The United States Civil Service Commission announces an examination on January 18, 1905, to be held in the chief cities of the United States, to secure eligibles from which to make certification to fill vacancies in the following-named positions under the Isthmian Canal Commission on the Isthmus of Panama: Surgeon, physician, pharmacist, hospital interne, trained nurse. The scope and character of these examinations are as indicated below. Each applicant for the Isthmian Canal Service will be required to submit to the examiner, on the day he is examined, a recent photograph, not more than three years old, of himself, which will be filed with his examination papers, as a means of identification in case he receives an appointment. An unmounted photograph is preferred. The date, place, and kind of examination, the examination number, the competitor's name, and the year in which the photograph was taken should be indicated on the photograph. For further information concerning transportation to the Isthmus, conditions

of employment, etc., attention is called to Form No. 1417, obtainable on application.

Surgeons.—Age limit, twenty-five to fifty years; salary, $250 per month. The examination will consist of the subjects given, with the relative weights indicated: (1) Anatomy, 5; (2) surgical bacteriology, 5; (3) surgical pathology and diagnosis, 15; (4) surgical practice, 40; (5) surgical gynecology, 5; (6) practical experience (this element will be rated upon the statements made in the application and accompanying vouchers. Special attention will be given to the quality of the applicant's experience, and applicants who have had extensive work in large hospitals will receive special credit), 30.

It is the desire of the Isthmian Canal Commission to appoint in this position only surgeons of thorough training and wide professional experience.

Physician.—Age limit, twenty-five to fifty years; salaries, $150, $200, and $250 per month. The examination will consist of the subjects given below, with the relative weights indicated: (1) Letter-writing, 5; (2) anatomy, 5; (3) therapeutics, 5; (4) physical diagnosis (including questions relating to tropical disease), 25; (5) general pathology and practice (including questions relating to tropical diseases), 25; (6) bacteriology and hygiene, 5; (7) obstetrics and gynecology, 5; (8) practical experience, 25. The element of practical experience will be rated upon the statements made in the application and accompanying vouchers. Special attention will be given to the quality of the applicant's experience, and applicants who have had experience in hospitals, particularly in the treatment of tropical diseases, will receive special credit. Only those who have had extensive hospital experience and are familiar with the treatment of tropical diseases, will be selected for appointmnt to the highest salaried positions. Promotions may be made in the discretion of the Isthmian Canal Commission from the lower to the higher positions in this grade.

OBITUARY.

Dr. J. F. Fischer, a native of England and a Civil War veteran, was found dead in his bathrom, at his residence on Ridge avenue, Philadelphia, on December 9. He was sixty years old and enjoyed a lucrative practice until his health failed two years ago. He was graduated from Jefferson Medical College in 1872.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, November 26.

GENERAL MEDICAL COUNCIL—BRITISH SOCIETY AND GERMAN SURGEONS—ASEPSIS IN THE BARBER'S SHOP—A MEDICAL COLLECTOR'S LIBRARY—DEATH OF A COURT PHYSICIAN—AN ABSENT-MINDED PRESIDENT—AN ECHO OF THE VISIT OF FRENCH DOCTORS.

The General Council of Medical Education and Registration, which is our professional Parliament, is now holding its eightieth session. The most important part of the proceedings was the announcement by Sir William Turner, Principal of the University of Edinburgh, that he had made up his mind to resign the office of President of the Council which he had held for about six years. The reason assigned for this step is that his duties in Edinburgh are of an onerous and absorbing nature and have their first call on his time and energy. For some months past he has become conscious of the fact that, having entered upon the stage of life which entitles one to be called a septuagenarian, the vital mechanism cannot be driven at the speed, and with the continuity of effort, which was both possible and pleasurable a few years ago. The President would have done better to follow the wise counsel offered to a newly appointed judge, whose knowledge of the law was imperfect, to give his decisions without stating the reasons on which they were based. Sir William Turner's decision does him credit, but the reasons assigned for it make one wonder why it never occurred to him until lately that duties, which ought to have been still more onerous and absorbing than the largely ornamental functions of Principal, were incompatible with those of the office which he is about to resign. When he was elected President of the General Medical Council it was understood that he would resign the chair of anatomy at Edinburgh which he had occupied for many years. Indeed, the fact that he was the incumbent of that chair was held to be an objection to his being put forward for the presidency, and it was only on the understanding referred to that the objection was waived. On his election, however, it became manifest that the "understanding" was in fact, as such things often are, a misunderstanding, and Sir William continued for some time to hold both offices. The explanation given by his friends was that he wished to complete the term of office as professor that would entitle him to a retiring pension. This did not altogether satisfy the objectors, but they had to accept the situation. By the way of making a graceful exit the President has presented a handsome silver gilt mace to the Council. Though he retires from the presidential chair he will continue to be a member of the Council till the end of 1906. He has been a strong President, if not exactly a great one.

A good deal of suppressed indignation is felt among the medical profession here at the removal of Mrs. Arthur Paget, a particular friend of the King, to Berlin for treatment by a German surgeon. In August last the lady fell down the lift in her own house with the result that both her legs were broken. The right was fractured in three places, at one of which union failed to take place. A short time ago Sir Frederick Treves visited her by command of the King. It was proposed to wait for some time and then wire the fragments. Apparently, however, the patient was not altogether pleased with the prospect, for the aid of Professor Hoffa, of Berlin, was invoked. He is said to have "put the broken bones together in two hours while the patient was under chloroform." Mrs. Paget has now gone to Berlin to be under his treatment. The case is boomed somewhat in the daily newspapers as a triumph of "bloodless surgery," and Professor Hoffa himself is described as "a German bonesetter." Evidently it is this "bonesetting" reputation that makes English Society believe in him; when they find out that he is only a scientific surgeon and a genuine professor in the Medical Faculty of a great university, they will probably lose faith in his thaumaturgic powers. The British profession does not grudge Hoffa his reputation as a "bonesetter," but our surgeons are not unnaturally somewhat nettled that it should have been thought necessary to take the patient to Germany. It is by no means a solitary instance. The members of the "upper ten," and those who

wish to be thought to belong to that class, flock to Pagenstecher when they have anything the matter with their eyes. The fact is that the fashion has been set by the Court which has an unpatriotic preference for German doctors. The Princess Christian loses no opportunity of sounding the praise of Pagenstecher and other Germans, and Society follows her like the little lamb that went after Mary in the nursery rhyme. She got Pagenstecher to see Queen Victoria; but, to prevent an outcry, he was ushered in by the backstairs. There are two Germans on the small committee appointed by the King to organize the sanatorium which is to be built and the money supplied by Sir E. Cassel, another German; and the physician selected by the committee for the post of Medical Director of the institution is a German. Altogether it is felt that in the sphere of medicine our Royal Family, in accent as in other ways, is more German than English.

The public Health Department of the Corporation of the City of London, after careful consideration of the dangers of septic shaving, has, in conjunction with the Incorporated Guild of Hairdressers, strongly urged the City Fathers to regulate the sanitary conditions of barbers' shops. The following proposals have been laid before them: (1) All shelves, fittings and tables on which instruments are placed to be of glass, marble, slate or other similar material. (2) Clean towels, etc., to be used for each customer, and a fresh piece of paper or clean linen to be placed on the back of chair or head-rest. (3) No general powder-puffs to be used, and powder pulverizers or cottonwool substituted. No sponges to be used. (4) All hairclippers, razors, scissors, combs, or other tools, after use, to be placed in a disinfecting solution. (5) Razors to be wiped on paper. (6) Perfect, clean hairbrushes only must be used. (7) Shaving brushes after use to be placed in a disinfecting solution. (8) Cut hair falling on the floor to be immediately swept up and removed and floors to be cleansed daily. (9) No general styptics, as alum crystals or blocks to be used, nor powders nor liquids applied on a towel or cottonwool, or by spray. (10) The most scrupulous cleanliness to be observed in all that pertains to the business.

In addition it is recommended that regular customers should be strongly advised to provide their own toilet articles—razors, brushes, etc.—which would be exclusively reserved for their owner's use; that all cut hair and paper should be burned; and that no customer apparently suffering from any skin or hair affection should be attended to save at his own house or offices, or in a private room. A further proposition provides for registration. This means that all barbers complying with these regulations will have a certificate to the effect that they are "fit and proper persons" to undertake the removal of superfluous hair with safety to the customer. Dr. Collingridge, the medical officer of health of the City of London, says disease is spread to a large extent through the "penny shaves," and it is to control these that the movement has been initiated.

The late Professor W. H. Corfield was best known to his professional brethren throughout the world as a leading sanitarian. To a smaller circle he was known as an enthusiastic collector of books, and especially as a connoisseur of bindings. To any one interested in his "hobby" he was always pleased to show his treasures, and he was a most interesting *cicerone* for, unlike many bibliomaniacs, he knew the inside as well as the outside of his books. He would even lend them for months together to a friend who wished to use them for literary purposes—surely a stretch of liberality almost unheard of in a collector. Part of his library was sold a few months ago for $3,500. The choicest part of the collection has been disposed of this week and brought over $25,000. It is considered doubtful by experts whether any other private collection comprised so remarkable a series of English bindings. Each book in Dr. Corfield's library was selected to exemplify in some way or another the art, workmanship, or development of bookbinding, and many of the volumes were in the Burlington Fine Arts Club Exhibition of 1891. Dr. Corfield was one of the few collectors who made a specialty of bindings, and many of the books which have just been sold realized far more than they cost him. In one instance, a volume, acquired at an auction sale for $25, realized $630. This is an extreme instance, but on the whole a very handsome profit has resulted from the doctor's "hobby."

Dr. G. Vivian Poore, who died a few days ago at the age of sixty-one years, was for some years the physician and the trusted friend of the King's younger brother, the late Duke of Albany. The Prince was a "bleeder" and required constant medical supervision. The late Sir William Jenner's life was for some time made a burden to him by incessant calls to attend the royal patient, who could hardly move without hemorrhage taking place into a joint. Jenner handed the Prince over to Poore who thus got an introduction to the Court which afterward stood him in good stead. Poore was a man of polished manners and an excellent all-round physician. He dabbled in several specialties—electricity, laryngology, neurology, and forensic medicine, and wrote more or less valuable treatises on all of them. He was emeritus professor of medicine in University College, and physician to the hospital attached thereto. As a sanitarian he was something of a heretic on some points. He would denounce cremation, not on religious but on scientific grounds, as a wanton destruction of the best natural manure. He had strong opinions as to the disposal of human excreta, which he held should always be applied to the fertilization of the soil. He had a garden in the suburbs in which he grew very fine vegetables by this method, and he claimed to get marvelous results from the same system on a small estate which he possessed in Hampshire. He was a charming man with whom even the most aggressive and self-assertive of colleagues must have found it difficult to quarrel; this was not due to any weak amiability in Poore but rather to a genial cynicism which prevented his taking himself or any one else too seriously. All Poore's writings are marked by sound practical sense and withal are eminently readable.

In a new edition of the letters of Thomas Gray, poet and naturalist, which is now in course of publication, a curious story is told of the absent-mindedness of a former President of the College of Physicians, by which that institution lost a great public trust that would have given it a much higher position in the public eye than it now holds. It appears to be only by accident that the great anatomical, pathological and zoological collection gathered by John Hunter, which formed the basis of the famous Hunterian Museum of the Royal College of Surgeons of England, came to be under the con-

trol of that body. By his will Hunter directed that his collection should first be offered to the British Government on reasonable terms; if it declined to buy—and it was a time when British Ministers thought far more of cannon than of scientific collections—the museum was to be offered to some foreign State or otherwise sold in one lot. With some difficulty the British Government was induced to purchase the collection for $75,000. It is said in the publication mentioned above that the Government invited the Royal College of Physicians to be the conservators of the collection. The offer was made through Dr. Thomas Gisborne, at that time President of the College, who put the letter conveying the proposal into his pocket and forgot all about the matter. After a time the Government, concluding that the College of Physicians did not wish to have anything to do with Hunter's specimen's, transferred the offer to the College of Surgeons which at once accepted the trust. Its enterprise has been largely rewarded. Without its Museum the dingy institution in Lincoln's Inn Fields would be nothing but a not particulary high class diploma shop.

The following incident is said to have occurred in one of the largest of our hospitals during the recent visit of the French doctors. A probationary nurse, hearing one of the gentlemen discoursing French very fluently, went up to him and rattled off an eloquent description of the most notable features of the hospital. "Most interesting, nurse! But I speak English too, as I am the Senior Surgeon of this hospital."

SOCIETY PROCEEDINGS.

CHICAGO ORTHOPEDIC SOCIETY.

Regular Meeting, held October 25, 1904.

The President, Arthur B. Hosmer, M.D., in the Chair.

Case for Diagnosis.—Dr. M. L. Harris showed a little girl, five years of age, who, when about two years of age, was taken sick. She had been well and healthy up to that time. According to the mother's statement, the child was quite sick, and remained in bed for several weeks. This was as much of the history of the case as he could elicit from the parents. There were no local symptoms about the knees, nor anything to call the attention of either parents or physicians to them. While the child was in bed the legs were gradually flexed, and when she recovered from her sickness the knees remained sharply flexed. No effort was made to extend them. Nothing was done to the legs while the child was in bed. No effort was made by the parents to extend the knees until about six months ago, when the child was brought to the city from the country and admitted to the Children's Hospital. The child was well in every way when she came to the hospital, with the exception that both legs were very sharply flexed beyond a right angle. There was no tenderness about the knees; there was no paralysis about the legs; no paralysis about the feet. The calves are all right, also the thighs. There was a little range of motion in the knees, but they could not be extended. There was apparently an enlargement of the lower ends of the femora. He put the child in bed, and extension was made in two directions. He made a trough-splint, fitted it upon the posterior surface of the leg, and attached a cord to each end and over a pulley so as to draw directly against the entire extent of the leg posteriorly, with extension also in the direction of the leg. He made quite rapid progress up to a certain point, when further extension ceased to make any improvement. Then he used force to complete the extension and applied casts. He was unable to extend the knees fully by force. After the application of force two or three times, gaining some each time, he used Ryerson's genuclast, and under anesthesia was able to get almost complete extension. This was done about four weeks ago. The legs were kept in casts until this morning. He thought the child would get motion in the knees, sooner or later. He bent them this morning far back, but it caused considerable pain. The question arises, what was the trouble with the child in the first place? Was it disease affecting the knees, or were the knees drawn up simply from the position in bed? Another question which arises is, whether in limbs so sharply flexed for so long a time the lower ends of the femora enlarge out of proportion to the rest of the bone? There does not seem now, nor has there been, any trouble with the knees. The question of enlargment of the bone, when pressure is removed, is a disputed one. If we were to amputate at the knee, the lower end of the femur would not enlarge out of proportion to the rest of the bone. The author stated that the case was not one of poliomyelitis, as there had never been any paralysis of the quadriceps muscles. There was no evidence of spastic paralysis. Dr. Harris believes the inability to extend the legs is due to the condition of the soft parts. He does not think it is due to the condition of the soft parts. He does not think it is due to contraction, but to failure of development of the soft parts, particularly the lateral and posterior portions of the capsule. When the leg is flexed, the attachments of these portions of the capsule are approximated, remaining in that position for some time until in the process of development they simply fail to develop and offer an obstacle to extension. The lower end of the left femur is larger than it ought to be, but whether there is a disproportion in size as compared with the upper end of the tibia he did not know. If there was, it must be due to the fact that it has enlarged for want of pressure. He could not see any other reason for it. It was difficult to say whether it is enlarged or not. He did not think this enlargement was the main obstacle to extension, but the failure of development of the soft parts. He looked upon the case as one of postural disease or postural deformity primarily while the child was sick, and after she was well no attempt was made to extend the knees to the natural position.

Extensive Osteomyelitis of Femur Healed Without Operation.—Dr. Frederick Cleveland Test showed an interesting case of extensive osteomyelitis of the femur that had healed without operation. The patient, fifty-two years of age, a physician, had been for the greater part of his life an athletic man. He had had the usual diseases of childhood and adolescence, yet in spite of these indulged a great deal in athletics. Twenty-one years ago, in the Schwatka Expedition to Alaska, he was one of some forty-nine, out of the party of sixty-three, who had the scurvy. During the attack, which lasted ten months, patient was run down and covered with ulcers, which persisted for nearly a year. Following this he gave up his medical work almost entirely, and devoted himself to exploring, as a

naturalist and geographer. This exposed him to a great many vicissitudes. He had two or three attacks of malaria; he had dengue; he had yellow fever. These diseases were mentioned because many of them, if not all, are what might be called blood diseases. At any rate, the blood is affected in all of them. Following the scurvy he had pyorrhea alveolaris, which still persists, but is less marked than it has been in previous years. About six and a half years ago he was in the prime of manhood, weighing about 180 pounds, at which time he fell and struck his right knee. In the course of a few hours the knee became very much swollen, tender and painful. Eventually, it measured twenty-eight inches in circumference. The patient was seen by several practitioners in New York and Philadelphia, among them Drs. Bull and Abbe. Dr. Abbe had even appointed a day for amputating the leg. The patient was also seen by Dr. W. W. Keen, Dr. J. William White, and the late Dr. de Schweinitz, of Washington. The diagnoses varied from syphilitic infection (of which there is no history obtainable) to osteomyelitis, and one practitioner made a diagnosis of tuberculosis. The leg remained swollen, although not discharging, yet evidently full of pus, for about two and a half years, when, after a slight injury, it opened and for four years discharged copiously. At one time there were twenty-two sinuses. When Dr. Test saw the case professionally, for the first time, in the latter part of last February, there were eighteen discharging openings, some of which were sinuses from the bone, and others ulcers on the surface. Patient consulted the speaker, not so much for the condition of his leg, which he deemed incurable, as for a distressing dyspnea, which for months had been affecting him. This interfered with his comfort more than anything else. The leg was discharging so that during the day, in spite of copious dressings of cotton and gauze, it would frequently almost fill the shoe, even though it were dressed twice a day. Within a few days he gave the patient extract of bone marrow, after having made a diagnosis of apparent osteomyelitis. The bone marrow was given in the hope of having a double effect, one of helping the bone to regain its normal condition, and the other of building up the much depleted blood. At that time the hemoglobin percentage was under 55. The hemoglobin soon increased rapidly. The patient had a considerable amount of cough, with a great deal of mucous râles. No tubercle bacilli were found present in the sputum. There was considerable dulness over the left side, which was attributed by some of the consultants to empyema. Personally, he thought it was an enlarged spleen. The leg began to improve. The local treatment he gave the leg was hydrogen peroxide, and in addition he applied one of the organic stearates, prepared for him by a chemical acquaintance in the University of Chicago. The stearate was made up from one of the phenyl group, and it acted in this case wonderfully. He thought the extract of bone marrow given internally was what gave the leg its impetus toward healing, although the stearate undoubtedly had much to do with it. After four months from the time of beginning of treatment the leg was practically entirely well. The dyspnea, however, continued to grow worse.

Patient was seen by several internists in this city, and with one exception their diagnosis was that of probable pulmonary tuberculosis, which the clinical condition seemed to bear out, and upon which theory they explained the dyspnea. Dr. Test's own final theory was that of a neuritis of the pneumogastric nerve produced by the long-continued sepsis, because this nerve was inhibitory, and the man's respirations were greatly increased. Furthermore, it supplies the inferior constrictor of the pharynx, and as the pharynx at that time had spasmodic contractions, its innervation was unquestionably interfered with. One consultant, who made a diagnosis more nearly like that of Dr. Test, said that in his opinion there was no pulmonary tuberculosis present, but that the trouble was probably due to some neoplasm of septic origin in the mediastinum, pressing upon the nerves there, and particularly upon the pneumogastric, and therefore advised the use of iodides. Iodides were employed, but no marked improvement seemed to result, although the patient was easier under their administration. The dyspnea rapidly increased until the patient was breathing sixty or seventy times a minute, and unable to take more than two or three steps at a time. He went to bed, and was semi-delirious for two weeks, during the end of which time Dr. Test began the use of hypodermic injections of nitrate of strychnine, in doses of one-thirtieth of a grain, twice a day, as a last resort, acting on the theory that it was a neuritis. To his delight the patient began to improve from the first day, certainly inside of the first three or four days, until, in about two months, the leg having healed meantime, his dyspnea was entirely relieved, so that now he is once more practically a well man.

NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, held October 11, 1904.

The President, G. W. Jarman, M.D., in the Chair.

Three Ovarian Cysts with Twisted Pedicles—Two Complicating Pregnancy; Two with Intestinal Obstruction.—Dr. A. Brothers presented the following tumors: (1) A cystic tumor that he had removed from a multipara, twenty-seven years of age, whose menstruation had stopped three and one-half months ago. There had been bleeding for three weeks prior to her admission to the hospital; with some pain in the inguinal regions. An unsuccessful attempt was made to prevent an abortion which occurred one week later. While making an examination under anesthesia two weeks afterward, and immediately before a contemplated trachelorrhaphy a cystic tumor in the right side of the pelvis of about the size of a full term fetus, was discovered. Immediate laparatomy showed the presence of a parovarian cyst, the pedicle of which had undergone 3½ twists. The tumor, though situated in the right side, was found to rise from the left appendage. There were no evidences of disturbed circulation. (2) The second tumor was removed from a single girl, twenty years of age, whose menstruation had stopped. The presence of a suprapubic tumor had excited suspicions of a possible pregnancy, although it was finally fairly excluded from the absence of other symptoms. After a short period of observation, symptoms of intestinal obstruction appeared, which were relieved by rectal enemata. A cystic tumor could now be definitely outlined, the pedicle of which was probably twisted. Its removal was postponed for a few days on account of a calomel stomatitis. The operation revealed a parovarian tumor of the size of a cocoanut, situated in the right side of the pelvis. Its surface was black, and its pedicle, consiting of the broad ligament, presented a

twist of 180 degrees. There were evidences of a recent peritonitis. (3) The third specimen was removed from a multipara, twenty-six years of age, who in February, 1904, had an attack of right lumbar pain that suggested renal colic complicating an early pregnancy. Menstruation did not stop entirely until after May. In August, while away in the country, severe symptoms of intestinal obstruction appeared, which were not relieved by medication for four days. She was then sent to New York and a diagnosis of peritonitis, intestinal obstruction and full term pregnancy was made. Enemata relieved the intestinal obstruction the first night she was at the hospital. A few days later, because of persistent pain, labor was induced after forty-eight hours by use of a Barnes bag, and a four months' decomposed fetus was removed. A large cystic tumor could now be felt in the right side of the abdomen. Three weeks later a laparotomy revealed a large ovarian cyst weighing three kilos that was adherent to intestines, omentum and appendix. The pedicle, which also ran over to the left uterine horn, showed a twist of more than 360 degrees with signs of beginning spontaneous amputation. The appendix, which was thickened and showed inflammatory changes at its tip, was removed. The ovary of the other side, which was enlarged, was also removed.

Dr. Joseph Brettauer, in the discussion, said that these cases are of rather frequent occurrence, and if they happen to be on the right side, are often mistaken for acute appendicitis.

Dr. J. Riddle Goffe thought that the description of the third case and the microscopical appearance of the specimen did not justify the removal of the second ovary.

Dr. J. N. West, who was present at the operation, stated the ovary was three or four times the size of a normal one, and, in view of the fact that ovarian cysts so often develop from apparently healthy ovaries, when there is a cyst of the other side, he thought its removal was a wise procedure.

Dr. H. N. Vineberg recalled two patients in his service at Mount Sinai Hospital, who had been admitted to the medical division with a diagnosis of acute obstruction of the bowels. They were recognized by the house physician, who had already served on the gynecological division, as typical cases of ovarian cysts with twisted pedicles. Acute obstruction seems to be a common symptom of this condition.

Dr. A. M. Jacobus stated that he had seen a number of ovarian cysts with twisted pedicles. Two were large dermoids; one of which had been diagnosticated as a malignant tumor of either the caput coli or the omentum; the other as a pregnancy. He had seen both of these cases before the twist occurred, and the twisting had been followed by a distinct diminution in the tension of the tumor in each case. Both occurred in single women, and one gave a history of amenorrhea. The tumors were centrally located, giving the sensation of ballottement and thus simulating a pregnancy of about five months.

Dr. E. B. Cragin wished to call attention to the likelihood of the pedicle assuming a twist after delivery in a case where such a tumor complicates pregnancy. He had seen such cases at Sloane, in which as the uterus involuted and the cyst had more room, a twist of the pedicle occurred.

Eclampsia in New-Born Twins.—Dr. Joseph Brettauer narrated the history of a case of intrapartum eclampsia, occurring in a patient, forty years of age, who had three difficult labors because of a contracted pelvis. The pregnancies and childbeds had been normal. A severe eclamptic seizure occurred without premonitory symptoms, followed in two hours by another. Coma followed with deep cyanosis and a tense pulse: rate 140. The urine was scanty, loaded with albumin, hyaline and granular casts. The irregular shape and large size of the abdomen suggested twins but only one fetal heart could be heard and palpation showed no other signs of a twin pregnancy. The cervix, which admitted three fingers, was manually dilated and the forceps easily accomplished the delivery of a deeply asphyxiated child in the L.O.A. position. A few minutes later another child presented by the breech and was also asphyxiated when delivered. Both children, after long and vigorous efforts, were resuscitated, although the breathing of the second one was always superficial. Six hours after delivery the first child had a severe and typical eclamptic seizure, which was followed during the next ten hours by four others of less severity. During the intervals the child breathed well, and showed no other symptoms. It took nourishment that was administered with a dropper twenty-four hours after birth without vomiting. The second had to be constantly watched from the moment of birth, as its respirations remained very superficial, and at times would altogether cease, so that artificial respiration had to be practised. Eight hours after delivery a mild but typical convulsion occurred, which was followed by nine others at intervals from fifteen to thirty minutes. After the last one it died. The mother had no more convulsions, but consciousness did not return, nor did the urine show any marked improvement, until three days had elapsed. The first child was then put to the breast and both mother and child progressed satisfactorily. Dr. Brettauer reported this case in order to elicit discussion as to the frequency of the occurrence of eclampsia in the newly-born of eclamptic mothers, as this, the first such case in his own experience. Although the head of the second child was not opened, he did not hesitate to exclude the possibility of an intracranial hemorrhage as the cause of the convulsions.

Dr. E. B. Cragin, in the discussion, said that in every large maternity hospital cases of eclampsia in the child, both ante and post partum, occasionally occur. Last year, at the Sloane, one child had an eclamptic seizure before delivery, as was shown by the contractures of the child, which was stillborn, and he was able to recall at least two others in which seizures occurred subsequently.

Dr. Geo. L. Broadhead's experience was similar to Dr. Cragin's. He thought that even if the head in the second child of Dr. Brettauer's case had been opened no light would have been thrown upon the case, as an intense and extensive congestion of the brain and meninges is a lesion common alike to asphyxia and death from convulsions. These children were certainly susceptible to the toxic influence of the maternal blood and the probabilities are that the convulsions were of eclamptic origin.

Dr. William S. Stone reported a case of eclampsia, occurring in a single girl, whose child breathed a few times during the extraction of the after-coming head and then succumbed. The autopsy showed a marked hemorrhage in the peritoneal cavity, which had come from a rupture of the liver. Sections of the liver showed those typical areas of necrosis that are now beginning to be recognized as the important lesions of eclampsia. He would corroborate Dr. Cragin's statement as to the frequency of such symptoms and lesions in children born of eclamptic mothers. He could recall other cases in which, although convulsions did not occur, marked jaundice was present.

Dr. J. Clifton Edgar said that in some of these cases

the mother may not be distinctly eclamptic, but may show symptoms of toxemia. He had seen one case with Dr. Jacobi, who thought the repeated convulsions were due to a cerebral hemorrhage, but complete recovery occurred and no after-effects on the musculature or ocular symptoms were left. Another child, apparently well when born, developed a severe coma in forty-eight hours. After repeated irrigations of the colon the symptoms disappeared and a final diagnosis of toxemia was made. In neither of these cases were the mothers eclamptic. One of them had been careless about her diet during the pregnancy and the urine contained albumin. The other case had jaundice and headache.

Congenital Atresia Hymenalis.—Dr. J. Riddle Goffe reported the following two cases of this condition: *Case I.*—A colored girl, nineteen years of age, had a distention of both the uterus and vagina from the repeated discharge of menstrual blood. The cornu of the uterus was involved to such an extent that by inverting the thin and flabby fundus, so that it presented at the vulva, the openings of the tubes could be distinctly seen, and were patulous for some little distance.

Case II.—A single girl, twenty-one years of age, had never menstruated, but had always been well and strong with the exception of periodic attacks of pain and discomfort since she was thirteen years of age. For the first three or four years these attacks occurred every four to six weeks, lasting a week, and were at times severe, accompanied by dizziness and spots before the eyes. They have been less severe and regular during the past four years, but every month she has suffered from malaise and headaches. She was well-developed with well-formed breasts. The lower abdomen was enlarged in the median line and a rounded mass presented the labia minora, which proved to be an imperfect hymen, bulging from the pressure of retained fluids. By rectum the vagina was found to be distended in all directions, so that it practically filled the pelvis up to the sacral promontory. An irregular summit of this tumor represented the uterus. The patient, by straining put the bulging tumor on the stretch so that without anesthesia a knife was plunged into one side and withdrawn so as to cut the hymen transversely, without causing much pain or hemorrhage. About a quart of dark, grumous blood, not coagulated and odorless, spurted out. Digital examination showed that at the upper end of the overdistended vagina, the cervix was also dilated almost to the diameter of the vagina, forming a sort of ring or band around its circumference. The canal of the uterine body was also dilated so that its wall was as thin as that of the vagina. No opening into the tubes could be appreciated by the finger. The entire cavity was irrigated with bichloride and salt solution and the patient discharged with instructions to use no douches, but to keep the external genitals scrupulously clean. These two cases of hematocolpos and hematometra suggest the problems that arise in the study of the formation of the vagina and hymeneal membrane. Ballantyne suggests the extreme probability that many of these cases are really examples of atresia of the vagina, from some of the records in which the presence of hymeneal membrane was hidden by the projecting vaginal sac. The toughness of the membrane in the second case suggested this condition, but no duplicate membrane could be found. A modification of the usual definition of menstruation as a bloody discharge from vagina, is suggested by such cases, as all of the essential factors in the menstrual function occurred without elimination from the body of its useless products. Howard Kelly calls this apparent amenorrhea, amenorrhea paradoxica.

Dr. E. C. Savidge, in the discussion, asked if the capacity of the vagina and the uterus had been enough to accommodate all the output of the repeated menstruations, or did the patient give a history of nosebleeds? He had seen a similar condition in which the patient bled regularly from the nose, although the atresia had been relieved. The uterus, however, is small and amenorrhea is still present. Such cases seem to answer the question, whether menstruation is the relief of a systemic or local condition.

Dr. H. N. Vineberg presented a drawing made from a patient, twenty years of age, who had never menstruated, but had had no symptoms. Two cystic swellings, resembling large tubal tumors presented, which proved to be the distended vagina bulging in front and behind the uterus. It was apparently normal. A part of the vaginal wall was eroded and discolored and did not disappear for some time after the excision of the hymen.

Dr. E. E. Bull recalled one example of this condition in a girl, eighteen years of age, who had never menstruated. The tumor reached above the umbilicus but consisted simply of the distended vagina. The uterus was apparently normal and menstruation has occurred regularly since the operation.

Dr. A. Brothers recalled three examples of this condition and thinks it is not so extremely rare. He keeps his patients in bed after such an operation.

Dr. Goffe, in closing, said that his patients had not had any vicarious menstruation. It seemed to him that the great pressure had so changed the endometrium that there was little danger of absorption, provided nothing was put into the vagina. He had only seen these two cases.

Further Results in the Use of the Modified Champetier de Ribes Balloon.—Under this title Dr. James D. Voorhees read the paper of the evening. He first noted the increasing number of difficult and operative labors, especially in large cities, due in part to late marriages, as in older primiparæ the soft parts were more rigid, the joints firmer, the bones of the fetal skull were harder, and the uterine contractions were weaker; due also to the mode of life and surroundings of women in the large cities. For the purpose of starting labor, of strengthening the pains and of assisting the dilatation of the cervix, he considers the use of the conical rubber dilator to be of more value than anything else. As in his first series of cases in the service of the Sloane Maternity Hospital, the dilators employed were the Champetier de Ribes, modified in such a way as to be stronger and thus to withstand the uterine and abdominal contraction, to resist the tension when filled with fluid, and to permit of a certain amount of traction without rupture. For this purpose there is a foundation of thin canvas instead of silk, covered by thicker rubber and firmer seams, especially where the tube joins the ampulla. Anesthesia is only used for their introduction, when a preliminary divulsion is required, or when the cervix is high, or if the patient is nervous and sensitive. Ordinary sponge forceps and a Davidson syringe are the only instruments required. The largest bag possible is used at the outset, and slowly inflated with slight traction so as not to displace the presenting part. His present series of cases are taken from 200 patients in his private practice and from 4,272 deliveries that have occurred at Sloane since the publication of his first series. From these two series of cases he concludes: (1) That the best artificial hydrostatic dilator of the cervix is a modified Champetier de Ribes balloon, because it is most like nature's bag. At Sloane it has been used 260 times to 73 manual dilatations, and in his

private cases as often as one in every five deliveries. (2) In dry labor by hastening the dilatation and by preventing the further escape of liquor amnii, fetal mortality is diminished. (3) In protracted labors, even when there is some obstruction, by shortening the first stage, the patient is less exhausted and better able to withstand operative procedures. (4) For inducing labor, it is the best method, it is successful where the bougie has failed, unless anesthesia is contraindicated in a case in which the cervix is long and undilated. A combination of both the bougie and bag is valuable, as used by Cragin and Norris. It is especially useful in cases of contracted pelvis, and in eclampsia, can be used oftener than is generally thought, thus avoiding the lacerations and mortality not uncommonly the result of accouchement forcé. (5) In placenta previa, especially the marginal variety, it will also avoid the lacerations of the uterus that are so commonly the cause of death and will lessen the fetal mortality.

Dr. Broadhead, in the discussion, stated that he had made extensive use of these balloons for the past five years and had found them to present all of the advantages that Dr. Voorhees had mentioned. He also was in accord with the opinion that they, combined with medical treatment, give better results in cases of eclampsia with an unyielding cervix than does accouchement forcé.

Dr. J. Clifton Edgar recalled how much better the original Champetier de Ribes bags were than either the Barnes' or McLean's modification, but in a short time their objectionable size was modified by one of the assistants in the Tarnier pavilion. Thus modified, he had used these bags satisfactorily for a number of years, although in one case the fetal head was displaced. It has largely taken the place of bougies in his own practice, although he still uses the latter in some cases to stimulate pains, and in some instances supplements the use of the bag with them, as Dr. Cragin does. He had employed them in the marginal variety of placenta previa, but would hesitate to do so in the central type, preferring to pack the cervix and vagina with sterile gauze, thus allowing the cervix to soften sufficiently to do a manual dilatation without danger of rupturing the uterus.

Dr. Franklin A. Dorman said that in teaching graduate students, whose previous practical experience had taught them the difficulties of treating a rigid cervix, eclampsia and placenta previa, he had noted the enthusiasm with which they received the description and method of introducing of these bags. In placenta previa of the central type he considers the use of these bags to be the most conservative method—with the exception, perhaps, of Cæsarean section—but does not agree, however, with the statement of Dr. Voorhees that the largest possible bags should be introduced at once. By using a small bag placenta is exposed more gradually and the danger of hemorrhage is minimized. He had seen the fetal head displaced when too large a bag was used, and in some instances the membranes have ruptured and the cord has prolapsed; and he has also seen the cervix torn when they were unskilfully introduced, but such accidents should nor occur if they are carefully introduced, and should weigh very little against their use.

Dr. Robert A. Murray agreed with the treatment of Dr. Edgar for central placenta previa. He sometimes used the Barnes' bag or a Champetier de Ribes after the cervix has become softened from the use of gauzes. He thought that, even after a severe hemorrhage, immediate delivery is often unnecessary, if the extremities are bandaged, the patient is elevated and saline infusion is used.

Dr. W. S. Stone thought the paper of Dr. Voorhees demonstrates that obstetrics is a scientific branch of medicine, which every one cannot practice equally well. He thought that the introduction of these bags required some skill and for one familiar with their use there would be considerable risk in injuring the cervix, although he did not bring this up as an objection to their use, but only to emphasize the point that special skill is required to practice scientific obstetrics.

Dr. Voorhees, in closing the discussion, said that a displacement of the fetal head had occurred in a few instances, in which a large bag was introduced and dilated too rapidly. Where haste is required and you have not the bags at your command he considers tamponing a suitable measure in dealing temporarily with placenta previa. He has seen a few cases of prolapsed cord in which the introduction of the bags was improperly managed. He agrees with Dr. Murray that one should often depend upon the softness of the cervix rather than the amount of dilatation. In regard to the size of the bag it was a general rule to use the largest bag possible.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

Section on Psychological Medicine.

(Continued from Page 1008.)

"Insane or not Insane" not Biological.—Dr. David Yellowlees (Glasgow) asserted that the legal principle "insane or not insane" was untrue to nature. There was no such definite and absolute division. Humanity stood on a great slope. On the top were the sane, stable, reasonable, self-guiding people; at the bottom were the idiotic, the hopelessly demented, and deluded. On the slope, and at varying heights on it, were many persons defective according to their height on the slope; their mental stability, knowledge, judgment, power of self-guidance and self-control were, in varying degrees, less than in ordinary sane people. Whatever the law might say, those persons on the slope must be dealt with specially. They were not like other men, and when they committed crime they should be judged more leniently and punished less severely (if at all), according to their position on the slope. There had been at least three cases in the Scottish law-courts where this principle had been acted upon, and in which punishment was mitigated on account of the mental deficiency, and sentence of death was not abrogated, but commuted to penal servitude for life. A course of insanity, with clinical teaching, should be made part of the legal training.

Degeneration—What is it?—Dr. Conolly Norman (Dublin) drew attention to the fact that the modern Continental theories of "degeneration," which have never found much favor in England, were singularly different from the doctrines laid down by Morel in his original treatise. He proceeded to comment on the violence which often (happily not to-day) characterized the discussions on this subject. It seemed to him that there was a tendency to obsession both on the part of the physicians and the lawyers—one side oppressed with the fear lest those of unsound mind might be unjustly and cruelly punished, the other lest wicked criminals should escape their merits through the machinations of foolish doctors. He listened with surprise to Sir Herbert Stephen's

letter because, as the speaker understood the statement, his "class three" was so constituted as to include every case in the least degree doubtful, and the great majority of those cases in which any question could arise. The speaker believed in the solidarity of the mental functions, and did not at all consider that the fact that a man understood the nature and qualities of the acts he performed carried with it responsibility. They could not separate the will from the other functions, or refuse to allow of its existence at all, as Hobbes did when he called it merely the latest motion in deliberation. As to the question of responsibility in court, the speaker held that this was not a question for the physician, and pointed out that Griesinger had long ago laid down this maxim, and had acted upon it when called upon for his opinion on this point. With reference to impulse, this plea had, of course, been abused, but he was glad to see that Dr. Mercier had clearly recognized that there was a distinct condition of impulse. Every clinical observer knew that this state had its very distinct and recognizable mental and even physical symptoms, and that the condition could rarely or ever be doubtful.

Others who read papers on allied topics were Dr. E. S. Talbot, of Chicago, J. Beard, of Edinburgh, and W. König, of Berlin, who gave masterly addresses on Heredity.

Dementia Præcox.—This paper was read by Dr. Conolly Norman, of Dublin. He said in recent years the doctrine of "precocious dementia," as deduced from the later works of Professor Kräpelin, of Munich, has acquired a great vogue. Its author, during the long period when he filled the Chair of Psychiatry at Heidelberg, attained the highest eminence as a teacher and as a writer. His work in psychophysics has much enhanced his reputation for exact observation. Even the fact that the successive editions of his text-book contain variations and modifications of former views very unusual in such volumes has only served to increase the confidence felt in his frankness and good faith. His theories as to classification have been very generally accepted in Germany, France, and Italy, and have attracted much attention in America. It is true that in England they have been comparatively little noticed, but that is probably less due to any feeling of their unsoundness than to the very general neglect of the progress of clinical psychiatry which has prevailed of late years in this country. The existence, either as a distinct entity (which Kräpelin does not affirm, though some of his followers do) or as a practically useful homogeneous clinical group, of any condition which can be called by the name "dementia præcox" does not, in his opinion, admit of proof, and is, therefore, here disputed. The collective grouping of hebephrenia, katatonia, and the paranoid forms makes so vast a congeries that it is impossible to perceive any connecting link between the items of the mass, save in their origin at the age of adolescence and in their supposed unfavorable termination. So much is endeavored to be put within one loose definition that the continent bursts and the contents escape from grasp.

The two first forms—katatonia and hebephrenia—seem to him to have considerable value as types of mental disease. Well-marked cases have, as all recognize, very remarkable facies. It does not detract from their value as types that they run into each other. A good case of katatonia seems at first slight to distinct, by its mental and physical symptoms, that we feel almost compelled to believe that here at least we have a specific disease. The studies of Bruce and others point strongly in this direction also; but our arrival at this conclusion is barred by the difficulty which intermediate forms interpose—forms that are many times more frequent than the pure and typical cases. The very term "dementia præcox," applied in common to affections such as katatonia on one hand, and, on the other, those forms of chronic delusional trouble which need much refinement to distinguish them from ordinary paranoia, would seem to indicate that the striking mental and physical features of katatonia are not sufficient to constitute it a separate disease. The same may be said of hebephrenia. While its exquisite forms seem to establish at least a remarkable type, its margins are so indefinite that it eludes satisfactory definition.

Paranoid Forms.—But the chief difficulty in the clinical comprehension of dementia præcox is to be found in the paranoid forms. There is absolutely no criterion whereby one can distinguish these from paranoia unless one suddenly drops the method of inclusion which has been followed, and reverts to the method of exclusion, holding that nothing can be called paranoia except the most exquisite pure and typical cases. This, however, will hardly save us from the followers of Kräpelin, one of whom has not long since, in the *Zeitschrift f. Psychiatrie*, freshly described at great length a case given by Kräpelin in his clinical lectures as an example of paranoia; but the disciple has outrun his master, for in commenting on this case he submits the view that it is really an example of precocious dementia. Even Lugaro exhibits the same tendency and makes a remarkable deduction in recently describing a case of an elderly man who, after an attack of depression with attempted suicide and consequent trauma capitis, became liable to recurrences of delusions of persecution associated with auditory hallucinations. This case Lugaro seems to consider was probably one of precocious dementia. It is difficult to see what value is to be attached to a term so loosely used.

With regard to origin at the adolescent period, the peculiarities of cases which begin at this epoch are largely the physiological characteristics of a particular period of mental growth exaggerated and distorted by disease, and are therefore not to be regarded as indications of a specific affection. Disease attacking an undeveloped organ has a natural tendency to interfere with its further development. This we see in every tissue from dental to cerebral. Hence it may often be that cases commencing at the period between puberty and adolescence, and not recovering, retain the impress peculiar to the adolescent mind when the patient's actual age is far past adolescence, but this does not go to prove that there is anything specific in the affection running this course. Kräpelin admits that any of the symptoms characterizing dementia præcox—verbigeration, playing with words, automatic obedience, stereotypy, catalepsy, grimacing, etc., may occur in individual cases of other forms of insanity besides precocious dementia. Furthermore, though 60 per cent. of cases occur before the twenty-fifth year, yet cases may begin much later; nay, Kräpelin quotes with approval an observation of Schröder's of a case beginning at fifty-six years. Again Kräpelin emphasizes the fact that in 20 per cent. of cases which overtly appear at the usual period, investigation proves eccentricity, etc., from the very earliest age. Finally, "causes" are described for dementia præcox as for other mental

affections, and among these cases are typhoid, scarlet fever, imprisonment, the puerperal state, etc. Surely these are very hard sayings. It is difficult to ask one to believe in the existence of a disease so little differentiated from everything else. But it needs here also to be again pointed out that Kräpelin does not claim so much for his precocious dementia as do his followers. He expressly states that the existence of dementia præcox as a separate and distinct disease is doubtful, and he points to the prognostic advantage of stringing together what may after all later on prove to be separate affections by the common thread of their tendency to dementia. In conclusion, he said, that considerable value attaches to the discussion of Kräpelin's doctrine of precocious dementia, though one may draw conclusions quite the opposite of his. First of all, in opposition to the notions current a quarter of a century ago, it is important to clearly recognize that all cases of mental disturbance are not favorable according to the youthfulness of the person attacked, but that a large number of people in whom insanity appears before the mind has fully developed suffer from the consequences of a permanent arrest of mental growth, do not recover, and exhibit during, perhaps, a life-long illness the peculiarities of the period of life at which their development stopped. That there are any definite indications by which such unfavorable cases can be recognized or foretold, and that they form a definite, even though a multiform, group of mental diseases, must be held to be entirely unproven. Classification is not a very important thing in the existing state of psychiatry, except for convenience in teaching, and the mere nomenclature of disease is of little value save as an index of our knowledge or ignorance. Taking note, however, of natural groups is of vast importance with a view to prognosis and to treatment, and it is therefore safer and more scientific to have no classification than one which confuses together under one denomination groups that have no natural connection, more particularly when such classification tends to establish counsels of despair.

Section on Medicine.

Tuberculous Pleural Effusion and Pneumothorax. Dr. William Osler said that at the threshold of the discussion the question arises, Which are the tuberculous pleurisies? Clinically these great groups of pleurisy with effusion may be recognized: (*a*) pyogenic, (*b*) the meta-pneumonic, and (*c*) the tuberculous. During the past twenty-five years the evidence has been accumulating in favor of the tuberculous nature of a large proportion of all cases of simple sero-fibrinous pleurisy. The exact percentage is hard to determine, but, in the absence of pneumonia or sepsis, the very existence of a pleural exudate is in itself sufficient to raise a supicion of tuberculosis. This view is based upon: First: The finding of tubercles in cases of sudden death in pleurisy with effusion. The literature contains many such instances in which, as a rule, tuberculosis had not been suspected, but the pleurisy had been attributed to cold, to injury, or to rheumatism. The traumatic cases are still more striking, and the evidence has been accumulating to show the tuberculous character of the pleurisy which follows falls or blows in the chest. Secondly: The frequency with which healed tuberculous pleurisy is met with in the post-mortem room. From Létulle's laboratory an interesting study has been recently published by Trouvé: among 303 cases of other diseases, the pleura was involved alone in 59. Thirdly: A study of the exudate: (*a*) The general characters present nothing distinctive. In acute cases it may be of turbid and dark brown color, with much fibrin, and not infrequently blood. In the more chronic cases it is clear, or has a slightly greenish of opalescent tint. The fluid is sterile as a rule, or the bacilli are difficult to find. (*b*) Cytological. The studies of Widal, Gull, and others have shown that in tuberculous cases the exudate contains small mononuclear leucocytes. (*c*) Bacteriological. The tuberculous exudate is stated to be sterile, but with the newer methods the bacilli may be found in a considerable proportion of the cases. After contracting into a fairly small volume the coagulum is removed and placed in a pepsin HCl mixture. When well digested in the thermostat the fluid is centifugalized and the sediment searched for bacilli. Of the last twenty cases in his series bacilli were present in the exudate in 4. (*d*) Inoculation. When the centrifugalized sediment or a large amount of the exudate is used the results have proved positive in a large number of cases—65 per cent. (Eichhorst) to 85 per cent. (Le Damany) in 55 cases quoted by Chevastelon. (*c*) The observations in the agglutination test are, as far as he knows, not extensive enough to warrant conclusions to be drawn from them. Fourthly: The presence of tuberculous foci in other parts—an old bone lesion, an adenitis, a fistula in ano, an epididymitis, or a chronic peritonitis. A latent pulmonary focus is not infrequent. Of 195 cases of pleurisy with effusion admitted to his wards, exclusive of all patients with obvious pulmonary tuberculosis, there were 30 in which tubercle bacilli were demonstrated in the scanty sputa. Repeated examinations were made in each case, and even when the patient insisted that he had no cough, he was urged to try to spit out anything he could. In one case fully a score of examinations were made before bacilli were found. Fifthly: Many cases of pleurisy with effusion subsequently became phthisical, the percentage varies from 15 per cent. (Cabot) to 45 per cent. (Hodge). Of 86 cases from his wards in which the after-histories were studied by Dr. Hamman, 34.8 per cent. became tuberculous and died. Grouping together the statistics which have been gathered on this point, the percentage is about 30. Sixthly: A characteristic tuberculin reaction has been obtained. Beck gave tuberculin to 68 patients with pleurisy, and 50 reacted (73.2 per cent.); F. W. White gave tuberculin to 8 cases of acute pleurisy, and 7 reacted. And, lastly, certain clinical features, as insidious onset, protracted course, early thickening with retraction, hemorrhagic character of the exudate, etc.

It is not always possible, nor is it necessary, to obtain this positive evidence. It makes no difference in the local treatment, and for general purposes it is best to assume every case to be tuberculous, unless there is very good reason to think otherwise. The acute sero-fibrinous and the subacute and chronic serous forms are the most important in connection with this discussion. It is interesting to note how often the acute form is a terminal event in chronic diseases, but a considerable proportion of the cases in young, healthy persons belong to this group, in which the suddenness of the onset and the intensity of the symptoms may be marked. The exudate is sero-fibrinous, and there is much fibrinous plastering on the surfaces. The fluid has a brownish tint, and is not infrequently bloody. In the subacute and

chronic serous form the exudate is more often opalescent, with scanty cell elements, and there are no fibrin flakes on the pleural surfaces, which are smooth and not acutely inflamed. The purulent tuberculous pleurisies are usually chronic, but there is an acute suppurative form running a course of great intensity, with abundant bacilli in the pus. To be profitable a discussion should be limited to questions still in dispute, or to points which new knowledge has brought into prominence. He proposed for discussion, first, the value of early and repeated aspirations in the acute forms; secondly, the uselessness of drug treatment; and, thirdly, the need of more careful after-treatment, local and general.

Aspiration has been in use for more than half a century, but it has been as an adjunct or supplementary to other measures, not as the treatment itself. Most of us have followed H. I. Bowditch's original indications (1850)—to tap when the symptoms were urgent, or the side was full, or in a moderate effusion, if it had lasted more than a few weeks, and was disposed to resist ordinary modes of treatment. Of late years there has been a tendency to resort to tapping much earlier, and not to wait until the fever has subsided—to make tapping an *indicatio morbi*, not simply an *indicatio vitalis*, or symptomatic, as, following Bowditch and Trousseau, we have hitherto done. The advantage of this plan was emphasized by Castiaux as early as 1873. The question was forcibly brought before the profession about eighteen months ago, when Dr. Delafield reported 200 cases of pleurisy, with effusion, treated at the Roosevelt Hospital, New York, from 1886 to 1901. In the first 82 cases medical treatment and aspiration were employed, in 118 aspiration alone. One hundred and eighty-two patients left the hospital cured, six left the hospital within ten days after aspiration and probably recovered; six were improved, but the results were uncertain, and in six there was no improvement. Sixty-four patients were cured within a week of the aspiration. There were no deaths. Dr. Delafield remarks that in private practice the results are still better: "In the fortunate cases, within twenty-four hours there is no more fluid and no more pleurisy. In a large number of cases the pleurisy is cured within a week." Those who know the highly-trained clinical judgment of Dr. Delafield will be able to appreciate at its true value this important contribution. He had been in the habit of treating pleurisy with effusion either by what is called the "thirst" method or by tapping and the administration of tonics and occasionally of the iodides and the use of counterirritation. In the eighteen months since the appearance of Dr. Delafield's paper there had been 22 cases in the wards, two of which were admitted as the effusion was subsiding, and were not tapped. In the others the effusion was treated by aspiration alone. In five the condition was chronic on admission, the effusion having lasted for two or more months. Four of these left the hospital improved and one well. The other 15 were discharged well. Only three of these cases were admitted in the first week, and the earliest tapping was done on the tenth day. Five cases were tapped twice, two three times, and one four times. Of this group of 20 cases, seven were shown to be tuberculous; in four bacilli were demonstrated in the exudate, in two bacilli were found in the sputa, both acute cases, which had not been under treatment for any pulmonary disease. One patient, ill for two and a half months on admission, was discharged improved, and was readmitted with miliary tuberculosis ten weeks later. These results are very brilliant, and not to be compared with Delafield's. The average stay in hospital was thirty-two days, the shortest was six days.

The Treatment of Chronic Renal Disease.—Dr. Hale White said that the title of this discussion is the treatment of chronic renal disease, but the conditions of kidney known as chronic nephritis, chronic Bright's disease, the granular kidney are so much more frequent than other chronic diseases of the kidney, that he confined himself to them. The difficulties of the subject are very great; for, although all are familiar with the morbid histology of chronic Bright's disease, its pathology is unknown and why it is fatal is a question; also, the health of sufferers from it fluctuates so, apart from treatment, that it may be difficult to say whether any particular treatment is beneficial. Therefore, it is probably best to discuss it under two heads—namely, the treatment of particular symptoms, and that employed owing to theoretical views as to the nature of the disease. A symptom which has been energetically treated is albuminuria, in his opinion quite wrongly, and often with disastrous results. The mere presence of albumen in the urine is usually of itself of little importance except as a help to diagnosis. It is so often met with in specific fevers, heart disease, renal calculus, cystitis, and other disorders, that about half the invalids who have albuminuria do not suffer from Bright's and yet those who try to treat it when it is associated disease, with Bright's disease neglect it in other maladies, and forget its ferquent occurrence in healthy youths. All doctors of long experience can call to mind persons who have passed albumen in their urine for twenty years or more without harm. A little calculation will show that a few grams only are passed daily in most cases of chronic Bright's disease, and the loss of proteid in this way is quite trifling, and could easily be compensated by a little more in the food. Whoever heard of death due to albuminuria? He had great sympathy, he said, with a celebrated physician who, when the treatment of albuminuria was much in vogue, said if he ever had it he trusted he would never know it. Much harm may be done to patients with chronic Bright's disease by frequent examination of the urine, for they become depresed unnecessarily if the quantity of albumen increases a little, and unduly elated if it decreases. Often, too, the examinations are valueless for comparison, as only a rough percentage of albumen is stated, without any reference to the total amount of urine passed in twenty-four hours. Albuminuria is a very important help to the diagnosis of all forms of Bright's disease, and steady fluctuations in its quantity are of great aid in enabling one to estimate the progress of acute and subacute cases; otherwise it is unimportant, and is, indeed, often slight for some time before death from chronic Bright's disease. But not only is the mere symptomatic treatment of the albuminuria wrong, but, as he had pointed out in a paper written eleven years ago, a milk diet, which is chiefly relied upon to reduce albuminuria, frequently fails to do so, and the sufferer from chronic Bright's disease is in many ways worse for the milk.

He then spoke of the symptoms connected with the cardiovascular system. Two extremes are met with—both bad—in chronic Bright's disease. Some patients have such a hypertrophied heart and high-tension pulse that they die of cerebral hemorrhage; others have a feeble pulse of low tension, a dilated

heart, possibly mitral regurgitation, and they die from cardiac failure. Those of the first group must keep down their arterial tension; physical exercise must be gentle, excitement must be avoided, the bowels must be loosely open once every day, partly because so doing helps to keep the pressure low and partly to avoid straining at stool, for that, like any sudden exertion, raise the blood pressure. Cerebral hemorrhage has often occurred in the water-closet. Meals must be small; alcohol and much meat or preparations of it, as soup, beef-tea, and meat essences, must not be taken, as both alcohol and the extractives of meat raise blood pressure. Little fluid should be drunk; digitalis and other drugs which raise blood pressure are especially harmful, but an occasional venesection is beneficial. Those in whom the pressure is low and the heart weak often owe their condition to treatment. They have been kept too exclusively on milk or farinaceous diet. Over and over again it is forgotten when treating disease that you cannot starve one part of the body without starving the whole. Under the impression that a small supply of milk is the best diet for diminishing the work of the kidneys, the patient with chronic nephritis is starved and his heart suffers starvation—a state of affairs made worse by the fact that as the arteries thicken the heart's work increases. In the paper to which he had alluded, cases are given which show how such patients improve when they are allowed an ordinary diet containing a moderate amount of meat, often, too, a little alcohol helps them. Not only does their circulation benefit, but as they are no longer starved they feel better in every way. Some patients with chronic Bright's disease are kept too much in bed; the heart, like the rest of the body, becomes flabby, improvement in all directions follows getting up and about, the circulation and digestion are strengthened, and the patient feels better. Much judgment is required to estimate the amount of exercise a patient may take. Some, by their doctor's orders, take too little and become fat; this is particularly bad in chronic Bright's disease, for the heart often has as it is too much work owing to the arterial thickening, and therefore only harm can follow if it has to pump the blood through an additional amount of fatty tissue. Whether, when symptoms of uremia supervene, much fluid should be drunk will be discussed later, but for the greater part of the life of a sufferer from chronic Bright's disease he will be best if he only drinks a normal quantity for that will be the best for the circulation, although probably the evil effect of the heart of a large amount of fluid in the vessels has been exaggerated. Many diabetics drink largely, and yet the heart in diabetes is small. The error of so lowering the blood tension by diminishing the intake of fluid so as to give the heart too little work is hardly ever likely to occur. To sum up, the whole object as regards the circulation is to keep the vascular tension normal without the aid of drugs.

Excepting edema, caused by cardiac failure—and then it is best treated by trying to strengthen the heart—it is not sufficiently common in chronic intestinal nephritis for it to often require treatment, but it does in the chronic tubal variety. Slight or moderate degrees are best treated by posture; the legs may be raised if the edema is of the feet, or the patient may be turned first on one side and then on the other if it is of the back or lungs. Much may be done by limiting the amount of fluid drunk and also by seeing that the bowels are regularly well open and that the motions are rather watery. One can often do very well without diuretics, but if the state of the kidneys is very chronic and the blood tension is low some caffeine or a pill containing a grain of each of mercury, powdered digitalis, and powdered squill may be of use, but it is a mistake to depend much upon diuretics to relieve renal dropsy. Diaphoretics are of help; they will be discussed when speaking of uremia. The most efficient way to get rid of edema is either with needles or Southery's tubes to puncture the legs, which are then kept dependent; but there is no operation in which aseptic precautions are more necessary, for edematous tissues are an easy prey to streptococci, and fatal inflammation easily supervenes

To Avert Uremia.—It seems reasonable also to try to avert uremia by the same plan, therefore if a patient suffers from chronic Bright's disease the bowels should be well open daily; the sweat glands should be kept mildly active, but frequent excessive sweating is very undesirable, for it cannot be induced without damaging the circulation, and, as has been already pointed out, this must be maintained as healthy as possible. But the patient may have a warm bath every night, rub the skin quickly after it, and then instantly get into a warm bed. Woolen garments should be worn next to the skin. Egypt is the ideal climate, for the temperature is high and the humidity very low, hence the perspiration rapidly evaporates, and the patient is not oppressed by his sweating. But as the humidity is so low the air feels very cold at night, especially if there is a wind, consequently the patient will often require to clothe very warmly after sunset, and this is especially true if he is on a boat on the Nile. Further, far up the Nile, as at Assouan, it may be difficult to get food proper for an invalid. For a few patients an occasional Turkish bath may be allowed, but usually not, on account of the harm that may be done to the circulation. Keeping the sweat glands active not only aids elimination but helps to prevent or remove edema. Perhaps this is the best place to draw attention to the fact, often forgotten, that a close relationship exists between the skin and the kidneys. The harm of chilling the skin may happen in more ways than one: excretion by sweat is stopped, contraction of the cutaneous vessels tends to raise the blood pressure and throw more blood into the kindeys; it also tends to raise heat production, and possibly therefore to increase some poisonous products of metabolism. To avoid chilling of the skin clothing should be warm, and it is especially necessary to change any that has become wet either from rain or sweat.

There is not much to say about the treatment of individual symptoms of uremia beyond what has been said about that of uremia generally. One should not be too hasty in attempts to check diarrhea and vomiting, for it should be remembered that they are eliminative. The severe headache so often associated with a high-tension pulse is sometimes relieved by nitrites, and both it and the sleeplessness may be diminished by a hot bath immediately before going to bed. If a hypnotic is required chloralamide is one of the best. Uremic dyspnea is often very hard to deal with. In addition to the general treatment of uremia nitrite of amyl may give relief, and sometimes oxygen is of use.

(To be Continued.)

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ORIGINAL ARTICLES.

THE ALLEGED USE OF DUM-DUM BULLETS IN THE JAPANESE-RUSSIAN WAR.

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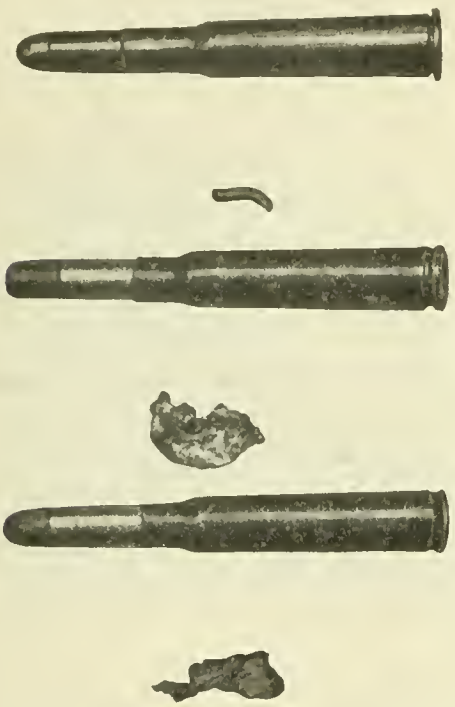
THE accompanying reproductions of photographs were received by the writer from Dr. Wm. B. Noyes, to whom they were sent by Mr. Franklin Clarkin, Special War Correspondent of the *New York Evening Post*. The photographs were taken immediately after the battle of Liao-Yang, and represent some of the unusual effects of modern rifle projectiles, together with cartridges, said to have been found upon Russian prisoners, and fragments of the jackets of bullets. The fragments of jackets or coverings of bullets were recovered from wounds in Japanese soldiers.

Fig. 1.



Reproductions of photographs of cartridges said to have been found on Russian prisoners captured at the battle of Liao-Yang, and of fragments of mantles or jackets of bullets. These fragments were removed from the wounds of Japanese soldiers.

The cartridges show a portion of the jacket cut away, and have undoubtedly been tampered with. The fragments of jackets taken from the wounds are such as might have been imprisoned in the tissues after having been separated from bullets deformed either previously or subsequently to their entrance into the body.

The phase of the subject of interest to the surgeon relates to the manner of production of these wounds, and the possibility of their being caused (1) by bullets belonging to the regulation arm, but from which the covering or jacket had been partially removed with the intention of producing a mushrooming effect upon striking the body, and with the result of inflicting extensive shattering and mangling of the parts; (2) by the shattering effects of the modern oval projectile under exceptional conditions, even when the jacket remains intact; and (3) by modifications of the normal course of the bullet in its flight (ricochet shots), attended or otherwise by disturbances of the jacket.

Fig. 2.

Bullet Wound.—The note accompanying this photograph states that the soldier was shot at the range of about 500 meters while kneeling, and that the bone was broken and the arm extremely swollen.

The distance at which the soldier was brings the case within the distance where the most destructive effects may be expected, even from a projectile, the metal jacket of which had not been tampered with. These destructive effects include extensive shattering of bone and the tearing of the soft parts along the canal and at the point of exit.

1. That these wounds could well have been produced by bullets, the jackets of which had been removed in whole or in part, is at once evident. The mushrooming effect at the place of exit is well-shown in several of the photographs. In fact, this effect is shown to such an exaggerated extent in some of the photographs that it seems incredible that so much

damage could be inflicted by so small a projectile, even when spread out into a mushroom shape, as claimed. The comparatively small wound of entrance, however, as shown in Fig. 2, sets at rest any doubt upon this point in this particular case at least (see comment). The alleged wound of entrance shown in Fig. 3, however, certainly appears more like a wound of exit, and this is

Fig. 3.

Bullet Wound.—The accompanying note states that the soldier was shot at a range of about 300 meters while lying, and that the bullet struck on the left forearm and made its exit near the elbow and grazed the upper arm. The entrance is oval, 4 cm. long and 3.5 cm. wide. The exit is circular and the diameter is 2 cm.

The appearance presented in this case, and the fact that the soldier was lying down when shot, makes it more than probable that he was struck by a ricochet shot, the bullet traveling near the ground and encountering some object in its course, and that only a portion of the bullet escaped and made the furrow in the arm. Either this or the shot took the opposite direction, making first the furrow in the arm, then the comparatively small wound in the upper part of the forearm, and finally making its exit at the larger wound in the forearm.

strengthened by the comparatively small size of both the furrow in the arm and the upper one of the two bullet wounds in the forearm. In Fig. 4 both the wounds of entrance and exit are shown; the comparative size of the former suggests that either the bullet was deformed before entering the body, or that it has been converted into a ricochet shot (see comment). In Fig. 5 the wound of entrance is shown, but no wound of exit, which leaves room at least for the supposition that none existed, the bullet having lodged in the body, a not uncommon occurrence in ricochet shots (see comment). In Fig. 6 the fact that the wound of entrance was circular is mentioned; other than this no information concerning it is given (see comment). In the note attached to Fig. 7 an enormous wound of exit is shown, suggestive of a shrapnel bullet wound, such as is shown in Fig. 8.

It would appear, therefore, that no proof exists that these wounds were made by bullets such as shown in the photographs, even though these were found with a portion of the jacket removed; the bullet belonging to the regulation arm, with its jacket similarly tampered with, will produce the same effects.

2. As to the shattering effects of the modern oval projectile, even when the jacket remains intact, the first point to engage our attention in this connection is the explosive effects of the so-called "projectile air" in wounds. It has been been claimed that, when a firearm with high-muzzle velocity strikes an object while it still possesses what is known as great internal energy, it compresses and drives ahead of it into the tissue a small column of air. This column of

Fig. 4.

Bullet Wound. The soldier was shot at the range of about 200 meters, while kneeling. The entrance and exit are both very large. The wound resembles one made by the fragment of a shell. The soldier affirms, however, that no shells were coming that way at the moment.

This injury might well have been caused by a bullet which had become deformed before entering the body by striking some object (ricochet shot), or, passing through some other body which, without necessarily disturbing its mantle, converted it into a "Querschläger."

air exercises an expansive force, and is said to produce the explosive effects sometimes noted along the bullet channel and at the point of exit. The explosive effects are said to be proportional to the size of the bullet, its obtuseness at the front, and its velocity, since these necessarily govern the amount of explosive air driven before it.

In the days of large and blunt rifle projectiles

the theory of "projectile air" was a tenable one, the more so for the reason that experiments, consisting of the dropping of bullets from a height into water, showed that a certain amount of air was forced into the water with it, as well as a further demonstrable portion of air enclosed by the water in the opening made by the bullet in entering and passing through the

Fig. 5.

Bullet Wound.—The note states that the wound of entrance, as shown in the picture, is 3 cm. long and 2 cm. wide.

The oval appearance presented by this injury is such as is produced by a bullet which loses its position relative to its long axis, and strikes the body sidewise or crosswise (Querschläger effect). If there is no wound of exit this would strengthen this view, since, in ricochet shots the "internal energy" is lost and the rotation imparted to it by the rifling of the barrel is disturbed.

water, seemed to sustain the theory. The air carried in by the bullet was estimated at twenty times the volume of the bullet itself (Longmore), It is to be doubted, however, whether a modern small-bore bullet could produce sufficient forced air pressure as to cause the destructive effects shown in these photographs.

Hydrodynamic pressure, it is claimed, influences the action of the bullet in a marked degree, and is used at the present time to explain the explosive or shattering effects of the entrance of the projectile into the tissues. The pressure effect rests upon the incompressibility of water and the narrowing of the space which it occupies in the tissues as a result of the transfer of pressure in all directions. It therefore follows that the most marked destruction takes place in organs containing the most water. The effect is the more intense the more fluid the organ contains, and the shorter the distance at which the shot is fired. The effect increases (*a*) with the amount of fluid; (*b*) with the velocity of the projectile; (*c*) with the increase in caliber of the projectile, and (*d*) with deformity of the projectile (Lardy, Encyclopädie der gesammten Chirurgie, Leipzig, 1901).

Kikuzi (quoted by Lardy) showed that an 8 mm. steel mantle projectile showed at 100 meters a hydrodynamic pressure equal to 6.4 atmospheres, while an 11 mm. projectile showed a pressure of 8 atmospheres.

The hydrodynamic pressure theory rests upon a more substantial basis than the hydraulic pressure theory of Busch, Kocher and Reger, according to the results obtained of experiments conducted by the medical department of the Prussian army. These experiments showed that the same explosive effects could be obtained whether the fluid was confined in closed or open

Fig. 6.

Bullet Wound.—The note states that the soldier was shot at the range of about 700 meters, while kneeling. The picture shows the wound of exit, the diameter of which is stated to be 8 cm. The statement is also made that the bone was "smashed." The entrance, located at the back of the arm, is said to be circular. The position of the soldier when struck afforded good opportunity for a ricochet shot and a previously deformed bullet. The "smashing" of the bone and the large area of destruction, go hand in hand. The statement that the wound of entrance was circular does not suffice to fix the fact that mushrooming took place after entrance, in the absence of a statement as to the size of the wound.

containers. In organs in which water is present it was found that the effect depended more upon the amount of fluid which they contained and on the energy of the penetrating projectile than upon the application of hydraulic pressure.

The hydrodynamic pressure theory of the shattering effects of projectiles is generally acknowledged to be applicable to gunshot

wounds of organs containing considerable fluid, notably the brain. The heart, stomach and intestines, particularly when these are struck at short range, may be similarly acted upon. The hydrodynamic theory, however, will scarcely serve to explain the conditions present in the localities shown in the photographs.

The rotation theory has been advanced to explain the appearances of an explosive effect upon the tissues traversed by a bullet from a rifled forearm (Busch). While it is probably true that a revolving body may draw the surrounding parts into the circling influences of its own motion, it is not at all probable that a projectile in striking a body at a high velocity can exercise

Fig. 7.

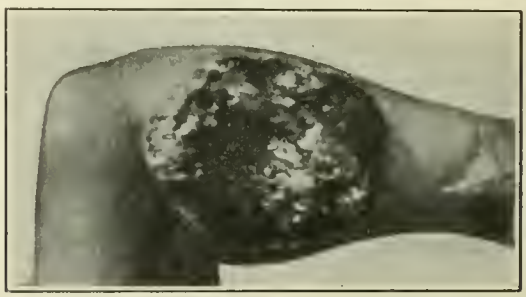
Bullet Wound.—This injury was received at the range of about 600 meters, the soldier lying down. The picture shows the wound of exit, which is stated to be 9.5 cm. long and 5 cm. wide.

The wound of exit only is described in the note. In the position assumed by the soldier when hit, ricochet shots are most likely to occur, the adversary also lying down and the shots traveling near the earth and encountering various objects in their course. It is not stated whether or not the bone was shattered. The injury is not unlike that shown in the next figure, said to be a shrapnel bullet wound.

any such influence. The ratio of the rotation to the velocity renders this impossible, as shown by Lardy. This observer showed by experiments that, traveling at the rate of 620 m. per second, a projectile makes 2,480 rotations upon its long axis, or four rotations per meter. There is no portion of the body where the bullet would be likely to traverse a sufficient distance to render the effects of the rotation other than insignificant. But a single rotation would be performed by the bullet in passing through 25 cm. of tissue. This estimate does not take into account the fact that the rotation is lessened by the resistance which the bullet meets with in its passage through the tissues. The rotation theory, therefore, can be dismissed in so far as it has any bearing upon the question at issue.

3. In considering the third proposition, namely, the effects due to modifications of the normal course of the bullet in its flight, attended or otherwise by disturbance of the jacket, a brief study of the experiments of Peter Bruns (Beiträge zur klinischen Chirurgie, Vol. 19, 1897) may be of interest. This observer experimented with the German model of the self-loading Mauser pistol of 7.5 mm. caliber, at distances of 10 and 20 m. He found that the size of the wound of entrance and exit diminished with the decrease in velocity or increase of the distance. Modifications of the size and shape of the wound of entrance were found to be due to the manner in which the missile struck the surface. When at or near a right angle to the surface, the wound was circular; otherwise it was oval.

Fig. 8.



Shrapnel-bullet Wound.—The picture shows the exit, 15 cm. long and 10 cm. wide. The wound resembles one by explosion. The bone was shattered. The note states that the injury is different from ordinary wounds by the shrapnel bullets.

Glancing shots were characterized by furrows and more or less torn and irregular edges. The point of exit was larger, as a rule, than the point of entrance. The former was liable to greater variations than the latter, these depending upon the elasticity and mobility of the part and the direction which the bullet takes in escaping from the body. Thus, when the projectile leaves the part in other than a direction coincident with its long diameter, the wound of exit is oval or irregular. The largest diameter reported, in which the bullet traversed muscular tissues alone, was less than double the diameter of the projectile (14 mm.). The track of the bullet in the muscles always showed a smooth lumen; the diameter of the latter was generally smaller than that of the projectile.

The influences exerted by shattering of bone upon the damage inflicted at the place of exit is well brought out by Bruns' observations. With more or less comminution of the bones of the extremities, correspondingly large and ragged points of exit of the bullet were observed. To this rule, however, there were exceptions, particularly in the case of the upper arm.

In summing up the observations of Bruns, based upon the experiments above alluded to, it may be said that the damage inflicted by the emergence of the projectile, other things being equal, varies according to the distance. In shots up to 50 m. with the arm employed there is in the majority of cases an area of destruction of muscles which is caused by fragments of bone forced along by the projectile. The area is small, not greater in size, usually than that of a walnut, and the track of the bullet is smooth and either of the same size as the caliber of the projectile or slightly larger; it contains more or less bone debris. In shots delivered from a distance of from 100 to 300 m. there is never any area of destruction of muscles, and the canal of exit is smooth and contains a small amount of bone debris. According to Bruns, the fundamental distinguishing features for near and distant shots lie in the variations observed in the wounds of entrance and exit.

In applying these observations to the conditions under review, it must be admitted that, while the experiments were made by a smaller arm than that employed by the Russian army, still with the exception as to size, the character of the weapon and the projectile were practically the same. In fact, Bruns adds to his observations estimates of the destructive effects at the point of exit of the projectile in the case of the 88 model (Mauser), the limit of shattering effects which he states to be 1,600 and 2,000 m. At the former distance there is still some slight destruction, but this disappears entirely at 2,000 m.

Applying these estimates to the cases in question, even at distances of 200 to 700 m., as stated in the accompanying notes, such destructive effects might be expected, however liberally one might be inclined to interpret Bruns' experiments.

As to the frequency of alterations of the shape of intact mantle bullets, the experiments of von Coler and Schjerning,[1] reported at the Twelfth International Medical Congress, are of value. According to these observers in 4.5 per cent. of all hits deformity of the bullet occurred to a greater or lesser extent. If only hits of the bone are taken into consideration, the percentage is very much increased. In wounds of the soft parts alone there was never noted any deformity of the projectile. Impact against the long bones of the body caused the most marked variations in the shape of the bullet, and in the bones themselves there are certain parts, harder than the rest, which cause the most pronounced deformities. As instances of the latter may be mentioned the linea aspera femoris and the edges of the tibia.

Von Coler and Schjerning call attention to the fact that a distinction must be made between deformity of the projectile caused by the body and those which result from impact upon some object outside of the body. In case the projectile is broken by such impact the fragments may become accidental hits and considerable damage caused thereby, even though the fragments themselves have lost none of their force.

The character and extent of injuries made by deformed bullets were found to be proportional to the deformity of the latter. It was also noted that in all cases of marked shattering effects the result of tearing of the mantle and mushrooming of the leaden body of the projectile there was also extensive destruction of bone, as well as of the soft parts at the wound of exit. These effects were in no way less than those wounds made by the leaden unjacketed mushroomed bullets of former times.

Concerning the question of "ricochet shots" or bullets that have assumed a position more or less sidewise or crosswise before entering the body ("Querschläger") it was found that, in addition to the well-known fact that these deviations from the normal course of the projectile were due to the latter striking such objects as tree-branches, etc., it was found that its passage through several different media, or through bodies that offer more or less resistance to the course of the bullet, produce the same effect. Penetration of several portions of the body without change in position of the long axis of the projectile is declared to be an exceedingly rare circumstance (see Fig. 3 and comment).

The amount of damage inflicted by a ricochet shot depends upon the amount of energy remaining after the bullet has ricochetted. A portion of this energy is expended in overcoming the resistance offered by the air; if, in addition to this, it becomes a ricochet shot and subsequently strikes the body as a "Querschläger," the damage inflicted will be in proportion to the force which it possessed before striking. In any case, however, the damage inflicted will be greater than if the bullet had struck in its long diameter.

The conditions change, however, when the bullet retains its normal force and loses the direction of its long axis only after entering the body. Here the projectile causes extremely destructive effects, tearing along with it, as it were, bone, muscle and portions of the skin.

When it is considered in how many different ways the wounds as shown in these photographs might have been caused in the course of a desperately contested action at short range, in which both high-muzzle-velocity projectiles and shrapnel bullets were used, the difficulties of deciding as to the exact mechanism of their production will be readily appreciated. What with the opportunities afforded for ricochet shots by the projectiles traveling close to the ground as occurs when volleys are delivered and received with the men lying down, the close range at

1 Ueber die Wirkung und die Kriegschirurgische Bedeutung der neuen Handfeuerwaffen. Berlin, 1894.

which the shots were received, and consequently the greater probability of the ocurrence of the shattering effects of modern rifle projectiles undistorted when the hit takes place, and, finally, the acknowledged fact that shrapnel was used in the same action (see Fig. 8)—all go to render it almost impossible to decide the question as to an infraction of the laws of nations upon the evidence afforded.

Concerning the claim put forward that these wounds were made by dum-dum or soft-tipped bullets, Mr. Clarkin writes as follows: "The picture of the cartridges and distorted bullets secured from wounds in Japanese soldiers seems definite enough, but as yet no rifle has been found on the field of battle, or taken from captured Russian prisoners that fits these cartridges, though we have in the preserve, where the war correspondents are kept, certain hunting rifles that seem to fit the cartridges. Wounds caused by these rifles in animals shot in the woods near-by agree with these pictures, at least in regard to the shattering effects on the tissues."

It is incomprehensible that Russian soldiers should, upon the long and weary marches which immediately preceded the battle of Liao-Yang, have burdened themselves with cartridges that did not fit the regulation arm which they carried. As for the distorted fragments shown in the photographs, which, it is claimed, caused the wounds exhibited, it would be impossible to state, in their present condition, even if the pieces themselves were before us, much less from a photograph, whether or not they ever fitted the cartridge shells in question.

In view of all the circumstances, therefore, it would seem as if the evidence presented in the photographs would scarcely justify the accusation that the Russians, in spite of the sentiment throughout the civilized world against the use of dum-dum bullets, and the declaration that their use was contrary to international rights and humanity by the Hague conference of 1899, had resorted to these forbidden projectiles.

RENAL HEMATURIA OF UNEXPLAINED ORIGIN. REPORT OF A CASE WITH CESSATION AFTER NEPHROTOMY.[1]

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Hematuria, as a symptom of renal disease, may be caused by several different affections of the kidney. It most frequently shows itself in cases of calculus and new growth, is not infrequent in tuberculosis, occurs in chronic as well as in acute nephritis, and is sometimes seen in movable kidney. Besides these well recognized cases, there occur others, forming a group, not well defined, but little understood and usually designated by the meaningless terms "idiopathic" and "essential."

During the past one hundred years the views concerning the etiology of the cases in this group have undergone radical changes. Roughly speaking, there have been three periods in the development of our knowledge of such cases, or perhaps one might better say that there have been three epochs, in the course of which the views have been changed, without, however, throwing much light on the underlying cause.

During the first period, the older writers simply classified those cases in which the etiology was obscure as "idiopathic hematuria," referring the cause to such ill-defined and unreliable factors as "exposure to dampness," "catching cold," etc. Thus, Rayer,[1] one of the most brilliant writers of the early part of the last century, in his *Traité des maladies des reins* (1837), a work on kidney diseases in some respects unsurpassed to-day, devotes a whole chapter to the subject, considering idiopathic hematuria not as proven but nevertheless as of common occurrence.

In the following epoch, marked by great activity in the field of histologic pathology, when the attempt was eagerly made to explain all symptoms by reference to pathologic changes, the so-called essential hematuria was lost sight of and it was quite generally held that bleeding from the kidney is always caused by some morbid process.

During the past twenty years, however, these ideas have been again modified, for with the development of renal surgery, permitting the far more frequent examination of the organ presumably diseased, fairly numerous cases were found in which an exploratory nephrotomy, undertaken on account of hematuria, supposedly caused by calculus or tuberculosis, proved disappointing. Nearly every surgeon has had cases presenting bleeding and perhaps pain, has exposed the kidney thought to be at fault and either by needling or by incision, has found nothing whatever to account for the hemorrhage. The kidney has been replaced and in a certain percentage of cases the bleeding has ceased. Such experiences have led to the more or less general belief in the older idea, that renal hematuria can occur, independent of pathological change, and hence our more recent classifications again include a group, variously styled "renal hemophilia," "angioneurotic hematuria," "nephralge hematurique," "renal epistaxis" and "hematuria arising from sound kidneys."

Two different theories have been given prominence in the discussion which has taken place on this subject. The prevailing one is that of Klemperer,[2] who explains the bleeding by supposing that there exists a disturbance of the vasomotors—a paralysis of the vasoconstrictors, causing a dilatation of the blood vessels and a consequent diapedesis of red blood corpuscles—hence the term angioneurotic. Klemperer argues "we have no doubt of the occurence of angio-

1 Read at the annual meeting of the Michigan State Medical Society, at Grand Rapids, May 25 to 27, 1904.

neurotic edema and why should not angioneurotic disturbances take place in the kidney as well as in the skin?"

Senator,[3] on the other hand, presupposes a local hemophilia or a hemophilia confined to one organ. I can find little in the arguments brought forward in support of this idea.

If we admit the possibility of such a cause or causes, the following case observed by the writer in Baltimore, would seem to fall in this group.

Case.—Mrs. J. C., a woman of forty-six years, first consulted me on September 23, 1902. She complained of passing large quantities of blood in the urine and of a persistent backache. The history was briefly as follows: Although never very strong or robust she had had but few illnesses, recalling only an attack of typhoid fever twenty-seven years previously. She had been living in a district where malarial fever prevails but the possibility of her ever having become infected was very carefully excluded. She was the mother of four children and had passed through her marital and menstrual life without mishap.

In May, 1902, five months before the consultation and when in her usual health, she first noticed blood in the urine and began to have a dull backache. At first the hemorrhage was intermittent, but during the summer blood constantly appeared, without much variation in amount. There was no history of sharp attacks of pain and nothing in the patient's account of her illness to point to the source of the hemorrhage, except the fact that the aching had perhaps been a little more severe on the left side. There was no disturbance of micturition and no sediment had been noticed in the urine. Since the onset of the trouble, loss of strength had been marked and there had been a decrease in weight of about six pounds. On physical examination, Mrs. C. was found to be poorly nourished but the color of the mucous membranes was fairly good. The heart and lungs were normal and the pulse, which was 72 to the minute, was of good volume and tension. The abdomen was flat and natural in appearance, with no bulging in the flanks. On palpation there was no resistance and no tenderness. Neither kidney could be felt nor could sensitiveness be elicited in either kidney region or along the course of the ureters.

The blood examination showed 7,000 leucocytes and 65 per cent. of hemoglobin.

Cystoscopic Examination.—With the patient in the dorsal position, a sterile catheter was introduced into the bladder and about 50 c.c. of bloody urine withdrawn. Cultures were made on agar-agar, which subsequently proved to be sterile. The knee-chest position was then assumed and a No. 10 Kelly cystoscope introduced. The bladder walls appeared slightly blood-stained but otherwise normal and the ureteral orifices seemed natural. Renal catheters were then inserted and about 15 c.c. of urine collected from each side, that from the left being intimately mixed with blood, while that from the right was clear. Cultures from both sides proved to be sterile.

Urinary Examination. Mixed Specimen.—Brownish red; specific gravity, 1.022; faintly acid; no sugar; considerable albumin. Abundant granular sediment, consisting of red blood cells and a few epithelial cells; no blood; no casts. *From right kidney.*—Pale yellow; clear; acid; no albumin. Urea 15 grams to the liter. Flocculent precipitate, consisting of phosphates and a few epithelial cells; no blood; no casts. *From left kidney.*—Brownish red; cloudy; neutral; considerable albumin. Urea 15 grams to the liter. Heavy granular precipitate, consisting of blood cells and epithelial cells; no casts. Numerous slides were prepared and stained for the tubercle bacillus, but none were found.

On October 1, three mmg. of tuberculin were injected. There was no reaction. For the next four weeks the patient was kept under observation. During this time, blood was continuously passed and the backache persisted. Specimens from the urine were repeatedly stained and examined for tubercle bacilli but none were ever found. On October 30, the patient was admitted to the Johns Hopkins Hospital, in the service of Dr. Howard Kelly.

As all our means of diagnosis were exhausted without arriving at a conclusion, an exploratory nephrotomy was decided upon and this was done by Dr. Kelly.

Operation.—Before administering the anesthetic, the left ureter was catheterized and the catheter left in place. Ether was then given and with the patient lying over an Edebohls'[4] bag, the kidney was exposed and brought out onto the loin. There were no adhesions and externally the kidney appeared to be perfectly normal. By means of a gravity apparatus attached to the catheter, the pelvis of the kidney was now distended with salt solution and while the assistant controlled the hemorrhage by pressure on the pedicle, a longitudinal incision was made through the cortex in the line advocated by Brödel[5] (just posterior to the posterior border of the kidney; the line, along which the anterior and posterior branches of the renal artery meet and through which an incision severs the fewest possible vessels). The distention of the pelvis and calyces simplified their examination, as it kept the tissues from becoming blood-stained. A most careful search failed to reveal the slightest abnormality, either of the pelvis or the parenchyma. A liberal sized piece of the cortex was removed for microscopic examination, the kidney sutured with through-and-through stitches of fine catgut, replaced and firmly held in position by packing with iodoform gauze.

Convalescence.—The after-history was uneventful. On November 10, I again catheterized the left ureter and found that the kidney was excreting its normal proportion of urine. This

was still blood-tinged but of a much lighter tint than before the nephrotomy. Blood continued in the urine, in decreasing amounts, until November 27, 1902, when it completely disappeared and has not thus far returned. The patient's general condition since the operation has been excellent.

Pathological Report.—Microscopical examination of the tissue removed showed it to be perfectly normal.

We have then, in this case, hematuria, the cause of which remains a complete mystery. There was no bacteriological infection, for the urine was proven to be sterile on two different occasions. Calculus and tuberculosis were carefully excluded. There was no nephroptosis. There were no macroscopical lesions and no microscopical alterations in the portion removed. The bleeding did not cease because of atrophy, consequent upon the operation, as might be conceived, for a subsequent catheterization showed that the kidney was excreting urine in the same amount as before the nephrotomy.

Shall we then say that it was a case of hematuria from an anatomically sound kidney and thus admit that this can occur? With the idea of ascertaining what pathologic evidence there is in favor of the existence of a true idiopathic hematuria, I have examined the literature of the past twenty years. Fairly numerous reports of such cases occur and they may be divided into two groups—(1) those from the medical clinics and (2) those from the surgical clinics. The former are much the more numerous but as the diagnosis rests on negative findings and on the cessation after treatment, without the true condition of the kidney ever having been learned, such reports furnish no scientific evidence.

In order to prove that bleeding comes from a sound kidney, it is necessary to prove (1) that the hemorrhage is renal. This can be done, with certainty, only by the catheterization of the ureters. (2) The kidney must be subjected not only to exposure, with palpation, needling or even longitudinal incision, but there must also be a microscopical examination of a portion of the renal tissue. Even when this latter test is applied, it is conceivable that the part of the organ from which no specimen is taken may be diseased and the cause of the hemorrhage.

Excluding movable kidney, I have studied 19 cases reported under one or another of these headings. There are numerous others, as in the list reported by Harris[6], but these I have not included as there are obvious facts given, which might well account for the hemorrhage.

Most of these 19 cases have been cited time and again throughout the literature as proving the existence of hematuria from normal kidneys. Of how much weight is the evidence? They may be divided into two classes: (*a*) Those in which the examination has been macroscopical only; (*b*) Those in which the microscope revealed evidences of interstitial nephritis but which have been reported as cases of idiopathic hematuria because the author either disregarded or was ignorant of the fact that bleeding may occur in chronic nephritis.

That the macroscopical examination alone is insufficient, especially if the kidney is simply exposed and palpated, without an incision through its cortex, is, I think, evident when one considers how frequently are seen at autopsies, kidneys, externally apparently perfectly healthy but on incision found to contain a small stone, a general interstitial inflammation, a focus of tuberculosis, or more rarely a new growth.

In the cases reported by Anderson,[7] Broca[8] and Passet,[9] the kidney was simply exposed and palpated. In those of Durham,[10] Abbe,[11] Legeau,[12], Oliver[13] (case II), Guyon,[14], Loumeau,[15] Harris,[16] Rovsing[17] and Debesaques,[18] the organ was incised and carefully examined but not studied microscopically.

In the other group, microscopical sections were made and areas of interstitial nephritis of varying sizes were found. Such was the case in the reports of Sebatier,[19] Senator,[20] Oliver (Case I), Floderus[21] and McGowan.[22]

After excluding these cases there remain two unexplained, one reported by Klemperer[23] and the other by Schede.[24]

Klemperer's case was that of a male, aged twenty-two years, who had always been healthy and had no hereditary tendencies. A year before coming under Klemperer's observation, he suffered for three months with bloody urine, but this disappeared and he remained free from it for nine months. It then returned and a cystoscopic examination revealed blood coming from the left ureter. Except for the blood, the urine was normal. After the hematuria had continued for four months, nephrectomy was done. The whole kidney was carefully examined by the best authorities and pronounced absolutely normal. Five years later the bleeding had not recurred.

Schede's patient was a man, aged fifty years, who had had hematuria for several months producing marked anemia and baffling all attempts at explanation. After a suprapubic cystotomy the ureters were catheterized, the source of the hemorrhage learned and the kidney removed. It proved to be perfectly normal.

Is our case similar to these or was there a microscopical lesion of some unexamined portion of the kidney? The piece removed for histological study was relatively small and might easily have been from a portion of the parenchyma which was sound. The case was more carefully studied than were most of those cited as examples of idiopathic hematuria and nothing was found to account for the hemorrhage. Still, I would prefer to adopt the view, advocated by Israel[25] and Rovsing,[26] that there was a cause—an undiscovered one—rather than to assert that it is an example of bleeding from an anatomically sound kidney.

In view of the fact that there are thus far on record but two cases which apparently prove that hemorrhage may take place from a kidney which is not the seat of a pathological change, it would seem far better to me to put them aside as yet unexplained, than to admit into our classification a group such as has been mentioned.

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THE PRESIDENT'S INAUGURAL ADDRESS.[1]

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I DESIRE first of all to thank you for and express my sincere appreciation of the honor you have conferred upon me by electing me to the high office of President of our time honored Society, the veteran of all the medical organizations existing in this great city to-day. And through all the many years of its existence, we can see a steady increase in its numbers and in the attendance at its meetings, until last year when our records show a larger average attendance than any of our contemporaries. As I recall the names of those on the list of my honored predecessors, a deep feeling of the responsibility of the office rests upon me, and it is only possible to promise that no effort of mine shall be spared to make the meetings of the coming year as interesting as possible, and to see that our efforts for the welfare of the profession and of the public shall suffer no diminution. Your retiring president has adminstered the office with such signal energy, tact and success, that in vacating the office he leaves the Society in the most flourishing condition it has enjoyed for many years, both as to the number on its roster of members, the largely increased attendance at its meetings, and the importance of the work accomplished by its committees.

The unusually large number of members added to our rolls during the year just ended is most gratifying, and allow me to explain some of the reasons why it is very desirable that this increase should continue until we have enrolled with us as nearly as possible every respectable licensed practitioner in the county. We may certainly with justifiable pride and without a gainsaying voice claim our organization to be the oldest and largest in the city; but to my way of thinking, this is far from being more than a most superficial view. There are so many of us who have the impression that the main function of the Society is to have presented to it once a month scientific papers for our instruction and entertainment and afterwards to have an opportunity for a half hour's social intercourse with our brother practitioners. But although this is an important part of our activities, we should have and do have much higher objects than mere personal benefit. If it were not so, we would be on a plane hardly higher than that of the trades unions. Our work has always been and must, as time goes on, look more and more toward the benefiting of the public where its needs and our acquirements coincide.

Would that I could impress upon all of you more vividly the importance and value to each one of us personally of the work done by your Comitia Minora and other standing committees. Let me emphasize that far the greater part of the work done by the medical profession in this city for the suppression of illegal and criminal practitioners and for the amelioration of conditions inimical to the public health is done by the New York County Medical Society. As you all will admit, the mere inertia of numbers has an enormous effect upon public policy, and therefore certainly the more nearly we include all respectable practitioners among our members, the greater becomes our influence for good in these two important objects. And so I would urge upon you all to persuade your professional friends and acquaintances who are not already members to become so. The effects of a largely increased membership would be promptly evidenced not only by much more efficient results whenever we endeavor to influence the authorities on matters pertaining to the public health, but also by increased consideration for our opinions and recommendations, by the courts and legislature.

To cite an example of this, on the tenth of last month, in the city courts, the maximum fine for the sale of impure milk was imposed on no less than fifty dealers. This was very directly the result of the work of our Milk Commission. Its bringing so forcibly to public notice of the deplorable quality of much of the milk sold in this city, aroused the health authorities to much more energetic action than they had shown for some time. It is doubtful if the Commission would have had anything like this consideration shown it and its recommendations, were it not that it had the backing of this, the largest medical society in the city. Here we have an evidence of the success attending the utilization of the weight of numbers.

Let us examine the other side where our numbers and influence, large as they are, seem still insufficient to obtain results alike important to

1 Read at stated meeting of the Medical Society of the County of New York, held in the New York Academy of Medicine, Monday, November 28, 1904.

the profession and the public. Instancing this is the unsuccessful attempt of the Legislative Committee of the State Society to obtain from the Legislature the enactment of a new statute defining, more exactly than had been done before and more in accordance with present day needs, what in the courts shall be the interpretation of the term "practice of medicine." Had our numbers been considerably larger, so much weight would not have attached to the representations of the faith curists and others when the bill came up for consideration in committee in the legislature, and from which I believe it never emerged. Again, I ask, can anyone doubt that the larger the number of members we have back of such requests and recommendations to the legislature, the more likely is the profession to obtain the enactment of a statute which will permit of our arresting, fining, and imprisoning imposters appropriating the title "Doctor" to deceive those coming to them for medical advice, no matter whether they merely prescribe or actually give medicine, or some other form of treatment. And also for the punishment of those far more dangerous persons who are actually licensed practitioners but who from the character of their work in performing criminal and illegal operations, are certainly morally criminal to the highest degree, but whom the law at present actually protects to a certain unnecessary degree, by placing so many requirements and restrictions as to the form and manner of having evidence admitted, that it is only with extreme difficulty and at great expense that a conviction can be obtained.

In addition to this moral effect of increased numbers, there will be the very potent advantage to your Board of Censors of having a larger fund to disburse in these prosecutions for the suppression of criminal and illegal practice and quackery. At present and for years past, we have been devoting every dollar of our surplus funds to this end, and you may rest assured that many times our annual appropriation could be used to advantage. After five years' work on the Board of Censors, I feel justified in the assertion that, taking into account our limited funds, we have attained the highest point of efficiency possible in the work accomplished by your Board of Censors and counsel. Do not misunderstand me as saying we are doing all that should be done; in fact, what we are doing is little more than an indication of what we ought to be able to do if we only had the sinews of war. Your counsel is so eager to prosecute this work that hardly a meeting of the Board occurs but he has to be warned that the limit of possible expenditure will be overstepped if he do not lessen the number of prosecutions. It has been asked time and again by the daily press why with thousands of charlatans in the city, and numbers of them openly advertising in the papers, the County Medical Society does not suppress the larger part of them. As already indicated, the answer to this criticism is our lack of funds, not only to defray expenses of a prosecution after an arrest has been made, but also the usually much greater expense involved in the collection of sufficient evidence to obtain an indictment. A larger fund is imperatively needed if we are, even in a moderate degree, to live up to the expectations of the public in this line of work. It has been suggested many times that our prosecutions against offenders are by right the duty of the District Attorney's office; but while this branch of our municipal government gives us a certain amount of encouragement by lending its countenance to our efforts and in addition an occasional very small modicum of actual tangible assistance, nevertheless the main burden of the work devolves upon us, or a prosecution would rarely be started and still more rarely carried through to a conviction.

Besides the lack of sufficient funds for a satisfactorily energetic prosecution of this work, and never in our history have more brilliant results been obtained in our legal department than during the last year, there stands squarely in the way of our success the lack of a statute defining the "practice of medicine" more exactly in accord with the present ideas of the public and the profession than that now in existence. Other States, notably Michigan, are decidedly in advance of us in this particular. Some of the suggested changes which seem particularly worthy of your careful consideration are:

1. Adding a provision to the present law defining more clearly the power of the Regents, to revoke the licenses of physicians for unprofessional conduct and providing for a form of trial before the Regents for the revocation of licenses.

2. A re-registration of physicians. It is a notorious scandal that many quacks are now practising under dead men's diplomas, and with the present medical register of this county containing nearly fifteen thousand names, it is getting to be increasingly difficult to identify practitioners with any given license. There should be inserted a provision in the proposed law requiring a registration with the Secretary of the Medical Society of each county.

3. The regulation of advertisements, following the lines of the Michigan law.

4. The reenactment of a comprehensive definition of what constitutes the practice of medicine similar to the definitions in many states, the idea being to so define the practice of medicine as to make it apply to all those who diagnose and attempt to heal by any method whatsoever.

5. So changing the penalty of practising medicine as to make it a misdemeanor. At present, for the first offense we cannot impose both fine and imprisonment. Neither can a fine be over $250. This ought to be changed so as to make it a misdemeanor, and thereby carry with it a fine up to $1,000 and imprisonment up to one year.

6. Inserting a provision in the medical law requiring all advertising medical concerns to post

on their signs the names of the practitioners and in the office of each practitioner the name of the person so practising. There is a similar provision in the dental law, and there should be one enacted for the medical law.

7. The ambiguity in the present law prohibiting the use of the title doctor should be cleared up. The words "without having legally received a medical degree" should be so worded as to make it certain that the meaning is "without having legally received the medical degree in the State of New York." The use of the title of doctor by barbers, chiropodists, etc., should be distinctly prohibited.

8. The agents of the Medical Society should be made peace officers under the statute, by enabling them to make arrests similar to the powers conferred upon the agents for the New York Society for the Prevention of Cruelty to Children.

9. The repeal of the provision permitting fines to be returned to the Society as a result of prosecutions.

But a united profession in the State is an absolute necessity before we can expect to wield influence enough to convince the legislature that our requests for any such modification of the statute would undoubtedly be for the furtherance of justice and the public welfare. It was hoped that this unity would have materialized ere this, naturally and quickly, through the amalgamation of the two largest medical organizations in the State, viz., the New York State Medical Association and our own New York State Medical Society, for it is the particular province of these two to prevent the invasion of the medical laws and suppress the particular branch of vice under consideration. The union of these two bodies into one compact body could not fail to result in a largely increased influence both with the courts and the legislature, and at the same time allow the appropriation of much larger sums for the work of the legal department.

After so much has been said and written about the origin of the New York State Medical Association over twenty years ago, it would be a waste of time to thrash over that ancient history this evening. But whatever our reasons may have been for the abolition of the Code of Ethics as an integral part of our Constitution and By-Laws, let me say that with one or two exceptions I look upon this venerable and much discussed document as a just exponent of the moral obligations of the physician, and that the further we depart from the spirit of its teachings the lower shall we fall from that high moral plane upon which the practice of our profession should rest. This action of ours, in abolishing the code, has since received the seal of approval by many other States following in our footsteps, and finally two years ago the wisdom of our action was tacitly admitted by the American Medical Association, at its annual meeting, making the code only advisory and not as before obligatory; besides making such internal and external changes as altering the name to "The Principles of Medical Ethics" and abolishing entirely one clause to which we originally took serious objection.

Possibly the following short synopsis of the amalgamation proceedings may be of interest: At the annual meeting of the State Society in January, 1902, a committee of five was appointed to confer with an equal number representing the State Medical Association, for the purpose of formulating a plan which should have for its object the reorganization of the regular profession of the State into a body in affiliation with the American Medical Association. This committee to report at the annual meeting in 1903. On February 7, the Executive Board of the State Association appointed a similar committee, and on March 19 the first joint conference was held. But little of real importance was accomplished during the year in spite of several joint conferences, because the old code was still an integral part of the Constitution and By-Laws of the American Medical Association and therefore binding on the State Association, and at the same time and quite rightly our committee declined positively to subscribe thereto. At the annual meeting of the State Society in 1903, our committee made a full report and was continued.

The deadlock between the two committees continued until on May 7, 1903, the American Medical Association, at its annual meeting held in New Orleans, took radical action and removed the obstacle preventing the unification of the two State organizations by adopting an instrument called "The Principles of Medical Ethics," and in the resolution this document was specifically termed "A Suggestive and Advisory Document." It was also stated in these resolutions that "The Principles of Medical Ethics" have been substituted for the "Code of Medical Ethics." Furthermore, the article in this instrument named "The Duties of Physicians in Regard to Consultations" has only this to say as to with whom we should consult. "The broadest dictates of humanity should be obeyed by physicians whenever and wherever their services are needed to meet the emergencies of disease or accident." Thus the deadlock was broken and on October 1, 1903, the State Association appointed a committee of five "empowered to do whatever was necessary and expedient to bring about a union in a just and equitable manner." Following this, a special meeting of the State Society was called for October 13, 1903. The meeting was held in this hall and by unanimous vote the conference committee was given powers equal to and commensurate with those given by the Association to its committee. This action pledged both sides to abide by whatever was decided by these two committees in joint conference. They met promptly and began their arduous and responsible task. They drew up a modified constitution and by-laws for the State Society and drafted

an act to authorize the consolidation of the Medical Society of the State of New York and the New York State Medical Association. This act was promptly passed by the Senate and Assembly, and was signed by the Governor on January 21, 1904. This act required that all the corporations involved should vote a majority of its members in favor of the consolidation; that is practically the different organizations in the various counties. All of the active county societies met promptly and ratified this action. On properly verified presentation of these actions to the Supreme Court, the latter was authorized by the act to make an order for the consolidation. When, however, this presentation was made, some objection developed from the Onondaga County Association, and the Court decided that the vote in the case of the Association had not been taken in accordance with the State law requiring the notification of individual members where a transfer of property was involved, and in consequence decided not to grant the order for consolidation. This made necessary a change in the By-Laws of the Association, which could only be accomplished by having the alterations presented at an annual meeting and voted on for adoption at the next succeeding annual meeting. As a result, the necessary changes in the By-Laws were offered at the annual meeting of the State Association held here last month, and they can not come up for adoption until the meeting in October, 1905. At the annual meeting of the State Association just held, the following resolutions were offered at the instance of its present president and unanimously carried, viz.:

Resolved, That the unfortunate delay in the efforts of the State Medical organizations to amalgamate, due to no fault of either party, is a source of grievous disappointment to this Association, and

Resolved, That it is the unalterable desire of the New York State Medical Association that harmony and good fellowship should prevail throughout the entire profession of the State, and to that end this Association pledges itself to endeavor to secure the union of the two State organizations until that much desired end shall have been accomplished.

Apparently, however, the accomplishment of the wishes here expressed was hardly aided by the fact that they dismissed their conference committee. But there may result no delay from this cause if a new committee is appointed promptly next fall, and I am glad to be able to inform you that assurances from those high in the counsels of the Association leave small doubt that the same committee will then be reappointed.

In closing this summary of the most recent developments in the efforts for consolidation, there remains only to say that the State Society and all of the active County Societies have absolutely honored all pledges given in joint conference by their committee, and now as far as the County Medical Society is concerned, we can only wait until the Association is able to carry out its part of the agreement. I feel very keenly the sentiment of disappointment over this delay and believe it to be a well-nigh universal one in our Society. If there are any cherishing different feelings, it has not been my fortune to come in contact with them.

And so let us enter on this new year of work with a fixed determination to do all in our power to foster a kindly feeling with our brethren in the Association, that when the amalgamation has been accomplished, there may be no serious internal dissensions, and that we may then present a united front in our combat with vice and in our efforts to obtain from the lawmaking powers changes in the statutes enabling us to proceed more promptly and effectively against charlatans and criminal practitioners.

I take pleasure in announcing the following committees for the year of 1904-05:

Committee on Discipline.—John P. Munn, M.D., Chairman, 18 West Fifty-eighth Street; Edward D. Fisher, M.D., and James D. Newcomb, M.D.

Committee on Hygiene.—Henry G. Piffard, M.D., Chairman, 256 West Fifty-seventh Street; Walter Bensel, M.D., and Smith Ely Jelliffe, M.D.

Committee on Audit.—John C. Minor, M.D., Chairman, 115 West Seventy-third Street; David M. Marvin, M.D., and Cornelius G. Coakley, M.D.

Milk Commission.—Edward K. Dunham, M.D., Chairman, 338 East Twenty-sixth Street; Rowland G. Freeman, M.D., Secretary, 205 East Fifty-seventh Street; Walter Lester Carr, M.D., Henry Dwight Chapin, M.D., Abraham Jacobi, M.D., Alexander Lambert, M.D., William P. Northrup, M.D., William R. Park, M.D., George M. Swift, M.D., Joseph E. Winters, M.D.

HYSTERECTOMY AND THE GENERAL HEALTH.

BY EUGENE COLEMAN SAVIDGE, M.D.,

OF NEW YORK.

When the choice is hysterectomy or death, hysterectomy is the only way to general health. And we should view such an operation in its best phase. The same obligation is upon us as upon the surgeon amputating a hopelessly infected leg. Bound by all the humanities to minister to the mind perturbed as well as saw off the leg, his optimism should dwell upon the mechanical perfection of the artificial limb. He should minify the increased susceptibility to hemorrhage, apoplexy, and the other disabilities following so great a change in the statics of the circulation.

Similarly, all that follows an "only alternative" hysterectomy is not to be weighed with the life it confers. It is worth the price without haggling. But there are cases in which the wisdom of a hysterectomy is debatable. With these latter I shall deal, understanding by a "debatable hysterectomy" the removal of Fallopian

tubes and ovaries, as well as the uterus, in patients who might be restored, more or less completely, by other methods. I distinctly exclude cases of hysterectomy in which a portion of the ovary is retained.

The following will express my convictions on this subject elsewhere recorded:[1]

"My clinic at Roosevelt Hospital ten years ago brought me a large number of patients from whom both ovaries, and frequently the uterus, had been removed by operators in various parts of the world. In some patients ten years had elapsed since the operation. The majority, however, were recent cases. This time corresponds with the highest tide in activity in complete salpingo-oophorectomy; never before, and not since, has like opportunity for postoperative study come to the clinic.

"My conviction grew that a portion at least of ovarian tissue is essential to a woman's well-being. Its entire removal brings psychical and material changes which result in very definite modifications in the nutritive, renal, hepatic, arterial and cardiac functions. These take her out of the gynecological field into that of general medicine, and the connection between cause and effect is lost; but nevertheless the patient's utility and life are thereby curtailed. This conviction is as strong as a conscientious and purposeful study of ten years, with ample opportunity and an open mind, can make it."

These convictions hold notwithstanding the undeniable good wrought by these operations. Hollow cheeks have rounded out and bloomed, pain-bent frames have straightened, and bed-ridden invalids have been restored to active life by hysterectomy. A mild sensual sense and power of orgasm have been retained. A degree of worldly prosperity has even come in the freedom from menstruation and child-bearing. Indeed, when we consider the enhanced quality of the naval orange from which the reproductive organs have been removed; or the increased beauty and cleanliness of the spayed lily from the florist, or the steady utility of the prepared horse over the restless stallion, or, again, the increased lard production in swine altered for the market, and then return to the contrast between the pain-bent, hemorrhagic invalid, transformed by hysterectomy into the round, well-staunched woman.—capable of a full month's work—we might be pardoned for reaching a superficial, but fatuous, verdict.

Hysterectomy enhances another capacity in a woman by twenty-five per cent. The calculation, as some of my confrères will remember, was made by an aged woman with saintly pose, distributing flowers and tracts in a certain women's ward. Her solicitude for young women without organs led to the discovery that, as a life-long procuress, she was seeking such cases with an avidity equal to that of an ornithologist after his *desiderata*.

Unquestionably, the severer the call for hysterectomy, the longer the suffering before it, the greater the contrasted benefit after it. And as Esau bargained his birthright for creature-comfort, so many of us would willingly quell instant pain at the discount of future good. In certain classes of the community, every "debatable" hysterectomy is such a discount.

The operation discounts effective longevity. For not only are all the circulatory susceptibilities noticed in the case of amputations relatively involved, but there is also a direct physical after-result. There will be noticed a mixed condition of arterial tension, venous engorgement and muscular relaxation, followed later by renal insufficiency. Nearly a decade ago I wrote upon this susceptibility of women with pelvic trouble —"with almost a chronic priapism of the pelvic organs, liver and spleen," as I then called it—to increased vasomotor pressure, and subsequent renal insufficiency. Professor W. H. Thomson, in a recent issue of the *Medical Record*, from quite another field, has reached a like conclusion regarding the order of the conditions; that the increase in blood-pressure precedes and perhaps causes the ensuing Bright's disease; that, possibly, through certain altered vaso-motor relations, adrenalin is liberated in the organism to cause the primary increase of blood pressure. Perhaps changes in the statics of the circulation release the adrenalin, or, as I now advance tentatively, perhaps an analogous super-skill of remaining function—like the acute hearing of the blind, the lip-reading of the deaf—ensues when the reproductive function is suppressed. There must unquestionably be some compensatory relation between foliage and fruit, so to speak, in the human plant.

Or, perhaps, the nerve stumps, acting on the sympathetic system, throw the organism into an unrelievable tension, as a soldier stands at attention before a superior officer. Tension is the physical call for the reproductive act; tension muscular, nervous and psychical, followed by equivalent relaxation.

But whatever the speculative cause, the result is the mixed condition above described, followed by renal insufficiency and a material shortening of life.

There is another side to the question with an equal bearing on effective longevity. Let us leave out of the question the few who have been left by "debatable" hysterectomy obvious physical and nervous wrecks, those with melancholia, those who commit suicide; and take the synthetical view of the vast majority who, superficially, do well, who are improved economical animals during the period of muscular activity, producing more flesh, scrubbing more days in the month, having, generally, a steadier utility in all material departments. Such cases furnish the precise analogue with the navel orange and

[1] Extract from views presented to the Sixth International Congress of Gynecology, Madrid, 1902, through Dr. A. Palmer Dudley.

draught horse. If such patients had neither mind, nor soul, nor future, and could be plucked and utilized at the proper moment, as a vegetable is ripened or a hog is fattened for the market, they would prove hysterectomy to be "the one thing needful," to adapt them to their environment. And as the criminologist has urged the spaying of criminals for the safety of society, so might the sociologist view hysterectomy on all the pauper classes as blessing the individual and immensely conserving national health. View the vast hysterectomy statistics of some of our French confrères in this light, and in the light of the avowed desire for spaying with many of the women of the town—for commercial ends. But even this is debatable, considering the occasional gem from the muck.

Even in these stolid ones of the community, however, may be noticed the following differences after a hysterectomy: a comparatively lusterless eye, a roughened voice and an increased hair growth; a flattening, or a fattening of the breast at glandular expense; an increase of fat, a devitalization, or a defeminization, or a hebetudinization, so to speak; a changing, as from the high-stepper to the cart-horse; from the alertness of the city-bred to the hebetude of province, where nerve stimuli are few and slow and response thereto similar. It is a wiping out of zest, spirit, and pride of port.

These objective results are patent to the superficial observer. Their significance, however, is more difficult reading. We are helped in this reading by the almost spectacular restorations possible in those cases that I have called "the self-obliterated feminine element." These cases, as elsewhere elaborated, represent the gradual stamping out in function of the selective cells of sex in women from twenty-five to forty years, who show diminished menstruation, loss of sensual sense and power of orgasm, with an increase of weight, roughening of skin and voice, and a growing lithemia and hebetude. As a cause, or a result, the obliteration of the feminine element in the individual almost rivals the work of the knife in its completeness. Note that in these cases the navel orange, draught horse, lard-producing analogy and capacity are not lost. But what goes is, reproductive capacity, spirit, initiative, outlook—in other words, the "house of the mind," without which there can be no effective longevity.

It is only to those color-blind to the possibilities of female life, aside from reproduction, that these matters will seem unimportant. For efficient longevity is entirely a class matter. There can be none of it after the time of muscular activity with those falling in my biological classification.

Less far afield may seem the question of modified conjugal destiny by hysterectomy, and the bearing of thwarted destiny upon health and spirit. Again, it is easy to realize the bearing on life-conduct, thrift, future-planning and morality, of a knowledge to a woman that she is hopelessly barren. The special psychology of a woman gives great possibilities for anguish here. She may have avoided children until she realizes her barrenness, then maternity becomes the sole yearning of her life. (This is so well shown in the converse found in one of the writer's cases, where, after six years of supervision, sterility was overcome, to the patient's great joy. Returning from a brief vacation in Europe I found her bleeding from an abortion procured during a sudden change of desire—the impulse of the moment outweighted the yearning of years.) Although sterility may persist without hysterectomy, the sustaining quality of hope remains. That any one to whom the physical destinies of a human being are entrusted should ignore so important a value, seems as strange as the limitation of the color-blind.

This is why our subject demands not only the separation of the "only alternative" from the "debatable" hysterectomies, but also the consideration of the class of patients operated upon. I am almost tempted to add that the surgeons themselves have varied ranges of vision.

And right here may be struck what I now call —at the recognized risk of being called fanciful —a distinctively American note in gynecology. I make bold to dogmatize that there is a necessity for a marked difference in deduction and procedure in dealing with American women. The point is as subtle as an instinct, but I think I can reason up to it.

Our gynecological statistics are made up from hospital work in congested centers, or are imported from Europe. Tenement house experience and statistics from European peasantry are reliable enough on the "navel orange, draught horse, lard-making classes," but absolutely incomplete with regard to the women of the so-called "plain people" of America, however lowly their station. While those nearer the top of the social fabric in all countries show fewer variations, the distinguishing difference between an American woman of humble station, and even an English woman correspondingly placed, is this: The American woman has a more highly-evolved nervous sytem, with its accompanying nervous vitality. If you question it, contrast an American farmer's wife whose son may be President in her hopes, with an English butler's wife, who is resigned and content in training posterity for similar station. The difference in the American woman has grown principally from an inherited perception of the chance to rise. Knowledge of opportunity has stimulated search for it, and from this has been manufactured—out of European material, it is true—that restless, alert, aspiring nervous system, with its initiative, which has had such a bearing upon our national life. It is a nervous system, difference, a spirit difference, which the ethnologist can spot instantly in a cosmopolitan gathering.

Here is where "debatable" hysterectomy works most harm, and where we get the sharpest contrast. I place the matter far above sensuality or brothel effect. For that energy brewing in a woman's mind, in many a cabin in the wilds, has been potentially the success which the world sees a generation later in the great centers. She may even have borne her last child, and be thenceforward sterile; she may appear restricted and unembellished, as she comes up to the great man of the city for his *ipse dixit*—nevertheless the American woman is not the same as the clinic woman. As a class, she has latent capacities and a promise of effective longevity that we jeopardize by the "debatable" hysterectomy, with its spirit-robbing, pride-abasing, zest-exhausting, devitalizing results.

And this is my "American idea" in modern gynecology.

66 West Fiftieth Street.

AN ANALYSIS OF TWENTY-FIVE CASES OF STRANGULATED HERNIA TREATED BY OPERATION.[1]

BY GEORGE TULLY VAUGHAN, M.D.,

OF WASHINGTON, D. C.;

ASSISTANT SURGEON GENERAL, U. S. P. H. AND M. H. S.; PROFESSOR OF SURGERY, GEORGETOWN UNIVERSITY, WASHINGTON, D. C.

IN 115 operations for inguinal and femoral hernia I have had 25 cases of strangulated hernia requiring operation. Care has been taken not to include simple incarcerated hernia, but only those cases in which the intestine was not only incarcerated but the circulation of blood was so obstructed as seriously to threaten, and in several cases to destroy, the integrity of the intestine.

As to variety, five were femoral and 20 were oblique inguinal. Twenty-three were on the right side—only two on the left. Hernias are much more common on the right than on the left side. In my list of 104 inguinal hernias, 69 were on the right and 35 were on the left side. Of 11 femoral hernias, nine were on the right and only two on the left side, but when we consider the 25 cases of strangulation we find all (5) the femoral, and 18 of the 20 inguinal hernias on the right side. It would seem from these few statistics that strangulation is more apt to occur in the right than in the left-sided hernia. I had no case of strangulated direct inguinal hernia. According to the relation of the hernia to the peritoneum there were 11 congenital, the funicular process remaining open, six acquired and one of the infantile variety in 18 cases, seven not being considered—the five femoral hernias and two inguinal in which the variety was not stated in my notes. The case of anatomically infantile hernia is the only case I have seen. The patient, No. 6 in the table, was a hard drinker, and had had a hernia all his life. On incising the coverings of the hernia, three distinct layers of peritoneum were divided before reaching the intestine—the first two layers forming a pouch above, which was continuous below with the tunica vaginalis testis.

These statistics would indicate that congenital is about twice as apt to become strangulated as acquired inguinal hernia. There were two cases of properitoneal or interstitial hernia—cases Nos. 15 and 24 in the table. In No. 15, a boy thirteen years old, the hernia consisted of a mass of gangrenous omentum tightly wedged in between the transversalis muscle and transversalis fascia above the internal ring. The funicular process was open. No. 24 was a youth, aged eighteen years, who stated that the hernia had suddenly appeared about forty-one hours before he was operated on. About three inches of small intestine were found wedged in between the transversalis fascia and transversalis muscle, and slightly protruding through the external ring. These are the only cases of interstitial hernia I have seen in 104 inguinal operations. Coley reports only seven cases in 937 operations.

Only one of my cases, No. 14, was complicated with an undescended testicle. My youngest patient was six weeks, and the oldest seventy-seven years old. Four patients were between ten and twenty years of age; two between twenty and thirty; four between thirty and forty; five between forty and fifty; three between fifty and sixty; two between sixty and seventy, and four patients between seventy and eighty years of age. The ages of the fatal cases were as follows: Two seventy-seven, one each sixty, fifty-two, fifty-one and forty-one years old.

Site of Constriction.—Often it is impossible to determine the exact point between the internal and external rings which causes the strangulation and sometimes it seems to be caused by constriction exerted along the entire inguinal canal. In sixteen cases in which I was able to determine definitely the point of greatest constriction, in eight cases it was at the external ring, in seven cases at the internal ring, and in one case in the abdominal cavity—probably volvulus (Case No. 8).

Contents of Sac.—In the large majority of cases (19) the sac contained small intestine alone, and in every instance in which small intestine was found in the sac and the portion identified—11 in number—it was found to be ileum. In one case the contents were two loops of small intestine (Case No. 18); in one, small intestine and omentum; in one, small intestine and undescended testis; in one, large and small intestine and omentum; in one, large intestine (sigmoid flexure) only; and in two, omentum only. In 11 cases dark or turbid fluid—sometimes blood clots—was found, and in these cases strangulation had existed from two hours to ninety-six hours; in eight cases over six hours, and in only three cases less than six hours.

Venous thrombosis is the mesentery, ecchymosis, or hematoma of the intestinal wall or mesentery were found in 10 cases, and while it

1 Read at the meeting of the Medical Society of Virginia, October 18 to 21, 1904.

is admitted that venous thrombi may be caused by constriction alone, yet it is believed that they are caused most frequently by taxis. In two cases the intestinal wall was rough and bruised, and in one a large hematoma was found in the intestinal wall, and was treated by incision evacuation and suture.

In nine cases the contents of the sac were gangrenous, three of the omentum only, and six of the intestine, and in four of these there was what is usually called general peritonitis.

In the gangrenous cases the time during which strangulation had existed was as follows:

In one case, thirteen days; in one, nine days; in two, four days; in two, three days; in two, one day; in one, four hours. In the last case the gangrene was probably caused by volvulus in the abdominal cavity—there was not sufficient constriction at the rings or in the sac to cause such a complete strangulation—Case No. 8.

Symptoms.—Besides the physical signs the two most valuable symptoms of strangulated hernia are *pain* and *vomiting*. Pain existed in every one of my cases, but it varied in character, duration and locality. It is often described as sickening, sometimes as griping, and usually lasts until the constriction is relieved or gangrene sets in. While usually felt most severely in the neck or immediate vicinity of the hernia, the pain may be general in the abdomen or the point of maximum intensity may be quite distant from the hernia. In Case No. 13, a right strangulated femoral hernia, the patient complained of most pain in the left hypochondriac region, and for sometime could not be persuaded that the pain came from a small swelling so far away, which was just a little tender, and which he had had off and on for thirty years, so that twenty-four hours of valuable time were lost, and a gangrenous bowel was the result.

Vomiting occurred in 20 of the 25 cases, nausea without vomiting in two, and neither nausea nor vomiting in three. In four cases the so-called stercoraceous vomiting occurred—that is, the contents of the small intestine were ejected, and as would be expected, strangulation had existed a long time—in two cases, four days; in one, nine days, and in one, thirteen days. The last two cases ended fatally.

Complete notes of the pulse and temperature were not kept, but enough was seen to justify the conclusion that they are unreliable as affording evidence of the condition of the bowel. For example, in Case No. 9, after strangulation had existed nine days, the pulse was 68 and temperature 96° F., whereas in Case No. 11, after strangulation had existed for the same length of time the pulse was 120 and temperature 98.6° F.

Treatment.—Taxis was not advised nor practised, except when insisted on by the patient after having the dangers pointed out. The danger of returning a bruised, ruptured or gangrenous intestine or omentum, or a loop of intestine with the constriction unrelieved is not to be compared with the safety of an open incision with inspection of the contents of the sac so that they may be dealt with according to the conditions found. Occasionally patients are seen who prefer death to an operation, as in one of my cases, an old lady, with a strangulated femoral hernia. The probable happy outcome of an operation and the inevitable fatal result without an operation were explained to her, but she deliberately preferred to die, and did so within a week.

In all of my cases, except three, after attending to the contents of the hernial sac, some operation for radical cure was performed. Of the three exceptions, two were cases of peritonitis, in which it was thought best to provide for drainage, and the third did not survive the operation. After examination of the hernia, with sufficient gentle manipulation to determine its condition, the operation is performed.

In inguinal hernia an incision is made as in Bassini's operation for radical cure, exposing well the external abdominal ring and the upper part of the hernial sac. The sac is then opened and the contents examined, after which the aponeurosis of the external oblique is slit up, opening the inguinal canal, and thereby relieving the constriction, unless it is situated at the internal ring or in the abdominal cavity. The contents of the sac are then treated according to circumstances. All constriction having been relieved the intestine is pulled down until the effect of the constriction on the bowel can be seen, as the pressure at this point is sometimes so great as to cause an indentation with damage to the bowel or even a perforation, especially in femoral hernia. If the intestine is of doubtful vitality it is covered with cloths and kept wet with physiological salt solution for from fifteen to thirty minutes. If the circulation returns, as shown by the red color, the bowel is restored to the peritoneal cavity, but if the circulation fails to return, resection is at once performed and the ends of the bowel reunited with sutures or button. A few gangrenous spots limited to small areas may be treated by turning them in with sutures or by telescoping a portion of the bowel, so as to cover and reinforce the damaged part and fixing with sutures.

The formation of an artificial anus with or without resection of the intestine must not be done in any case in which the patient's condition will permit resection with immediate reunion, since Gibson's statistics show a mortality from the former, just double that which results from the latter operation. In every case in which the patient's condition will permit an operation for the radical cure is performed.

In femoral hernia the incision is made from above downward and inward, crossing Poupart's ligament at an angle of about 45 degrees, and extending over the hernia. Poupart's ligament is divided whenever it is found necessary to do

so. The subsequent steps so far as treatment of the hernia is concerned correspond with those already given for inguinal hernia. As far as I have been able to ascertain, the results of the operation for radical cure in strangulated cases are as satisfactory in every way as those performed at other times.

Mortality.—There were six deaths in 25 operations: *Case 6* was a hard drinker, had a fatty liver and died of delirium tremens on the fifth day after operation. *Case 7* was a woman, aged seventy-seven years, who had suffered from strangulation thirteen days, and had an incipient general peritonitis when the gangrenous intestine was resected. She died of peritonitis forty-eight hours after operation. *Case 9* was a man, fifty-one years old, who had had a right inguinal hernia about forty years, but he stated that he had not been troubled with it for more than a year. At the time of operation he had been suffering with intestinal obstruction nine days, and was very weak. No sign of hernia could be found by examination externally, but laparotomy revealed a knuckle of ileum which was little more than a Richter's hernia, having entered the internal abdominal ring just far enough to produce complete obstruction and become strangulated. The patient died on the table apparently from exhaustion as soon as the hernia was reduced. An interesting phenomenon in the form of dynamic ileus was observed in this case—the intestine for fully 10 inches below the strangulated portion being contracted into a small cord completely obliterating the lumen so that water would not run through. There seemed to be a tonic contraction of the circular muscular fibers which remained in that condition after the specimen had been removed from the body and placed in preserving fluid. *Case 11* was a woman with a right femoral hernia which had been strangulated nine days and general peritonitis had set in. The gangrenous intestine was resected and a Murphy button used, but death occurred fourteen days later from peritonitis. *Case 13* was a man, aged sixty years, whose death was caused probably by his own obstinacy in not permitting an operation sooner. He had gangrene of the intestine from three days of strangulation with numerous mesenteric thrombi and beginning general peritonitis. Nineteen inches of intestine were resected, but death occurred four days later. Necropsy showed general peritonitis and gangrene of three feet more of intestine. There may have been an arterial embolism in this case.

Case 22 was a feeble man, aged 77 years, inmate of an insane asylum, who had had strangulation of a right oblique inguinal hernia for eight hours, and had been treated by taxis. Three feet of ileum, almost black, were found in the sac, with numerous large thrombi in the mesentery. Death occurred on the fourth day from toxemia or exhaustion. No peritonitis.

There were six cases of resection of gangrenous intestine, with three deaths, all from general peritonitis, which existed at the time of operation.

Reviewing the histories of these fatal cases it is almost certain that with one exception, Case 6, a timely operation would have saved the life of every one of the patients. It may be of interest to show the mortality (1) in general, (2) when gangrene or general peritonitis was not present, and (3) when gangrene or peritonitis was present.

Operations for strangulated heria, 25; deaths, 6; mortality, 24 per cent.

Cases in which the contents of the sac were in good condition (though some of these had thrombi in the veins and damage to the intestine), 16; deaths, 3; mortality, 18.75 per cent.

Cases in which the contents of the sac were gangrenous or general peritonitis existed at time of operation, 9; deaths, 3; mortality, 33 1-3 per cent. Six of these cases were resection of gangrenous intestine and three of removal of gangrenous omentum.

At Johns Hopkins Hospital from 1889 to 1899, there were 64 operations for strangulated hernia, with 19 deaths, a mortality of 29.68 per cent.

Cases in which the contents of the sac were in good condition, 48; deaths, 4; mortality, 8 per cent.

Cases in which the contents of the sac were gangrenous or general peritonitis existed at the time of operation, 16; deaths, 15; mortality, 93.75 per cent.

Erdmann reports 8 operations for gangrenous intestine or omentum, with 4 deaths; a mortality of 50 per cent. Six of these were resection of the intestines, with two deaths; one removal of gangrenous omentum, with one death, and one formation of artificial anum, with one death.

Horwitz reports 43 operations for strangulated hernia, with 15 deaths; a mortality of 34.88 per cent. Three of these were resections of gangrenous intestines, with two deaths; mortality, 66.66 per cent.

Coley reports in 1,063 operations for hernia, 17 operations for strangulation, with two deaths. One resection of gangrenous intestine resulted fatally.

Gibson collected from the literature, from 1888 to 1898, 226 resections of gangrenous intestine, with immediate reunion, having a mortality of only 26 per cent., and in 63 cases in which the Murphy button was used, the mortality was even less, only 22 per cent.

This is a much smaller mortality than that of any of the operators here quoted, and is probably a little more favorable than would be the statistics of *all* cases operated on, were it possible to collect them. It is well known that the successful is much more apt to report his cases than the unsuccessful operator, so that many failures are never heard of, whose sum total added to those published would materially increase the mortality. This is true of operations for other troubles beside strangulated hernia.

THE SIGNIFICANCE OF PUS IN THE NOSE, WITH SPECIAL REFERENCE TO THE AFFECTIONS OF THE ACCESSORY SINUSES AND THEIR PROPER TREATMENT.[1]

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Until within a comparatively short time accurate diagnosis of the affections of the accessory sinuses of the nose has been unknown. With the development of nasal surgery as a specialty by itself came the more thorough study of the anatomy of the air spaces of the head, and finally the working out of a new pathology and a rational treatment for the affections of these sinuses, which are responsible for many a headache, and many a pain, and many a nasal discharge which were formerly classed under the vague heading of neuralgia or catarrh.

The treatment of these affections has grown from a mild conservatism to an extreme radicalism, and is at the present time still in a transition stage. The last word or the final treatment in regard to them has not yet been settled upon.

The accessory sinuses of the nose consist of the large maxillary antra, one on each side; the two frontal sinuses; two sphenoid sinuses, and the anterior and posterior ethmoid cells. They are all continuous with the mucous membrane of the nose, covered with a thin layer of mucoperiosteum, have ciliated epithelium, and comparatively few mucous glands. The frontal sinus mucous membrane is said to have none. They are very irregular in shape, practically invisible under normal conditions by rhinoscopic examination, and the diagnosis of their affections presents some difficulty.

The maxillary antrum is the largest cavity, lying in the upper jaw, opening into the nose. On the nasal side it is covered over with portions of the ethmoid bone and the inferior turbinate, and has a small, natural opening into the middle meatus of the nose at about its middle third and very near the highest portion of the nasal wall of the cavity. This opening is 2 to 6 mm. in its vertical, and 3 to 18 mm. in its anteroposterior diameter. Opposite this and behind the natural outlet, there are frequently one or more accessory openings. The outlet of these openings is in the hiatus semilunaris, a crescent-shaped opening formed above by the bulla of the ethmoid, and below by a sharp process called the processus uncinatus. Internal to this, and practically a part of it, is another space called the infundibulum, into which opens the outlet from the frontal sinus, the frontonasal canal. The average size of the antrum is 1¼ inches in its anteroposterior diameter, 1¼ inches vertically, and one inch in width. It is subject, however, to extreme variations in size, and is frequently very different in formation on the two sides of the face. With a high arched palate the antrum is long and narrow. With a sinking in of the canine fossa it becomes much shallower. On its outer wall it is thin and the outer portion of its inferior wall is in close relationship to the roots of the first and second molars and the first and second bicuspids. The roots of these teeth frequently project into the antrum, and indeed the first ideas of antral pathology came from the hands of the dentists, who occasionally found, after removal of teeth, that the antrum contained pus; and our first belief in regard to this subject was that antral suppuration was always of dental origin and the treatment should be by an opening through a tooth root or through the alveolar process.

The floor of the antrum is somewhat irregular. It may be on a level with the floor of the nose. It is frequently lower. The thickness of the bone over the tooth roots varies greatly, being thinnest over the first and second molar teeth. The second bicuspid and the first and second molars have a pretty constant relation to the antrum, the first molar being usually certain as to relation. In entering the antrum, however, in this way, the proper angle of insertion of the tooth must be carefully followed; otherwise in antra of extreme variation from type it is possible to puncture either the floor of the nose or cheek wall instead of the antrum itself.

The maxillary sinus is constantly present. At birth it is a slit with a vertical diameter of 3 mm., transverse of 2 mm., anteroposterior of 7 mm. There is no maxillary sinus beneath the orbit at this time. Later cancellous bone forms between the floor of the orbit and the alveolar process of the jaw, and the antrum is complete at twenty-five years of age, the floor of the orbit being the roof of the antrum. In the roof of the antral cavity lies the infra-orbital canal, transmitting the superior maxillary nerve and the infra-orbital vessels. An occasional defect in this wall may cause pain in connection with antral suppuration. The position of the infra-orbital nerve has especially to be borne in mind in radical operations.

The frontal sinuses are two large cavities in the frontal bone beginning just above the roof of the nose and extending laterally over the roof of the orbit, going half-way up the forehead to the superciliary line and extending about 1¼ inches downwardly. These dimensions vary very greatly, so much so that any average dimension is of little value.

There is always an opening at the most dependent portion down into the nose through what is called the fronto-nasal duct, opening usually into the infundibulum, sometimes in the hiatus semilunaris, occasionally opening directly down into the nose independent of the infundibulum, but always underneath the anterior end of the middle turbinate. The practical import of this is that sec-

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ondary infection from antrum suppuration is possible; the frontal sinus on account of the frontonasal canal draining into the hiatus, and also the converse where the drainage of the pus through the hiatus may infect the antrum.

The frontonasal duct varies from a mere slit to one 7 by 8 mm. in size, the average diameter being 4 by 3 mm.

There is almost always a septum between the two sinuses; indeed, Logan Turner says he has never found it absent in the normal skull. Other observers say that it may be absent. There may be a defect of this septum even though the two sinuses do not communicate, the two lining membranes completely closing this defect. In case of empyema of one side there is liability of infection of the other. I have had one such case of bony defect in the septum wall in which one sinus apparently infected the other, though the lining membranes of each sinus were apparently intact. The natural outlet is not visible in the nose on account of the frontonasal duct, the infundibulum and the hiatus being practically covered by the anterior end of the middle turbinate, so that probing and syringing of this cavity is always difficult in the normal nose, and may be impossible until the middle turbinal or its anterior portion is removed. The condition in life with swollen tissues is in marked contrast with the dried specimens, the mucous membrane of which is entirely absent, as it is comparatively easy in the dried specimen to carry a probe into the frontal sinus even with the middle turbinal in position.

The septum of the frontal sinus is usually in a medial plane, but may be to one side or the other, so that it is possible to open the wrong cavity when operating through the anterior wall; but no matter how oblique this division line may be placed above at the lower end and immediately above the root of the nose, the line is usually mesially placed. Occasionally the sinus extends over the entire root of the orbit.

The floor of the frontal sinus is in close relation to the anterior ethmoid cells. The lining membrane of the sinus is slate in color, while the dura, on the other hand, has a white appearance. The outer table is from 3 to 5 mm. thick and if on chiseling, one goes much deeper than that without finding the sinus, he should begin to think either that the sinus is obliterated or that the dura may be the next structure which will be met.

The frontal sinus does not usually appear until about the age of puberty, though signs of development are evident earlier, and develops from two centers of ossification.

The anterior ethmoidal cells vary in number and position from four to six or eight or more, also in size; are in close relation to the roof of the orbit; open, as a rule, into the middle meatus, frontonasal duct, or the infundibulum, but may open directly into the cavity of the nose; are subject to the same inflammatory affections as the other sinuses and are sometimes opened or probed by mistake, the operator thinking he is on the way to the frontal. The posterior ethmoidal cells are fewer in number and open into the superior meatus. These openings are not visible in the living subject, and there is usually a thicker bony division line between the anterior and posterior cells than between the individual cells themselves. Pus in these cavities is quite likely to drain backwards and appear as a sticky mass, more or less dry, on the pharynx wall.

The sphenoidal sinuses, two in number, lie in the body of the sphenoid bone, and vary greatly in size, frequently being very large; have their natural outlet vertically, with their thinnest wall anteriorly, and are reached by following along the septum about the middle of the middle turbinate, and feeling for the same with a probe. A probe passed along this line of the middle turbinal as far as it will reach, the point then depressed to the floor of the nose, would pass directly into the sphenoid cavity.

Here, then, is a complicated spongy network of bone with thin walls all lined with mucous membrane, varying somewhat in the quantity of its mucous glands; subject to inflammatory action, influenced by the swelling of the three turbinal bones which interfere more or less with the natural drainage, and the subject of inflammatory action causing bone pressure, headache and the discharge of mucous and pus.

Given then a pus discharge in the nose, how shall we locate its place? We will see what are the symptoms of inflammation in the individual cavity, and then see if with the picture of the inflammation of each individual place in our mind, we can, in the presence of actual pus, make a sufficiently accurate diagnosis, although it may be said here that an affection of one of these, absolutely independent of that of any other, is comparatively seldom, and it now and then happens that the entire spongy network is simultaneously affected.

ACUTE INFLAMMATIONS OF THE ANTRUM.—The acute type begins with a simple serous inflammation, co-existing with, or the result of, some general inflammatory condition in the turbinates or ethmoid, whereby the natural openings are closed and the outward drainage for a time interfered with. This inflammation later becomes mucous, mucopurulent, or, if it lasts long enough, distinctly purulent.

Influenza, acute exanthemata, operative procedures in the nose, requiring the tamponing of the nasal cavity, head colds, intensified by deflected septa, spurs, enlarged middle turbinates, polypi, or any other local pathological condition interfering with drainage are the principal causes. In spite of the fact that the natural drainage point of the antrum is very much higher than its floor, acute inflammations commonly tend toward recovery, as, owing to the shifting position of the body, especially in sleep, plus the aid of capillarity, drainage is brought about. The blowing of the nose, causing negative air pressure, also favors the removal of the material. The larger the nat-

ural opening, the more rapid the healing. Influenza has been regarded as one of the most frequent causes, yet Fraenkel demonstrated the presence of the influenza bacillus only once in thirty cases. It is probable that in most cases of acute rhinitis there is more or less co-existing inflammation of accessory sinuses which accounts in a measure for the slow healing.

The symptoms are those of pain in the affected side, headache, tenderness on pressure in the canine fossa, a swollen nasal passage with a mucous or mucopurulent discharge. While one-sided as a rule, it is not impossible for both sides to be affected at once. The pain may be that of dull pressure referred to various portions of the affected side of the face and head or sharply located. In cases of dental origin the pain may be referred to the region of the affected tooth. It is my own experience that acute cases of dental origin are comparatively rare. Neither the location of the pain nor its character of necessity definitely locates the trouble. In some cases the pain is very severe and is relieved only by the discharge of mucous or muco pus. Acute inflammations tend to recover and only occasionally become chronic: when they do become chronic it is doubtless due to some interference with the natural drainage.

The treatment consists of general measures directed to the cause, the relief of the pain, douching and syringing with warm salines to favor the discharge, careful examination of the nose, and, whenever possible, the correction of any interference with natural drainage and the hunting for the natural and accessory openings. Washing out through the natural orifice is recommended by many writers, and Curtis says it can be done in three cases out of ten with the Hartmann canula passed ½ cm. from the vestibule. I have not personally been very successful either in finding the natural opening or in washing it out, and have found it much easier and no more painful to puncture underneath the anterior third of the inferior turbinate at the highest point possible, using a curved canula with beveled edge point. This method is quite as rapid and invariably gives one definite information, though one negative puncture is not conclusive evidence that the antrum is not diseased. When the space underneath the inferior turbinate is thoroughly cocainized, with the addition of some adrenalin, the puncture can be made either with the light blow of a hammer or often with the muscular force of the hand, with very little difficulty and practically without pain. The cavity can then be syringed out with warm saline solution, relieving at once the tension and pain and rendering the other measures locally and generally of much more immediate effect.

The ordinary acute case which is seen at the purulent stage will last under this form of treatment from one to two weeks. I am in the habit of syringing out the cavity daily or every other day. A small silver Eustachian catheter easily maintains the opening made by the canula. If it does not, enlarge with a curette. Should the pain disappear and the discharge continue for weeks and be purulent in character, the condition becomes one of chronic empyema. Most cases of chronic inflammation, however, are brought to the physician's attention after they have lasted a long time and arise from two main causes, namely: disease of the teeth, or a primary purulent inflammation of the antrum due to obstructon of the natural outlet, to injuries as traumatism, to the entrance of micro-organisms or to infection from the ethmoid or frontal sinuses. It is probable that the two main causes are about equal in the number of cases which they produce, although some writers lay more to one cause and some more to the other. The varying virulence of the bacteria and the individual predisposition of the individual seem to be the principal factors in deciding whether an acute inflammation heals in the one case or becomes chronic in the other. The form of inflammation is purulent or mucopurulent, sometimes cystic. The micro-organisms found are the *Bacterium coli commune, Bacillus pyogenes fœtidus, Diplococcus lanceolatus,* aspergilli, tubercle bacilli.

The cases of dental origin arise as a result of diseased root processes, especially when the distance between the roots of the teeth and the floor of the antrum is very short. Not infrequently no complaint will be made of the teeth, or it will be reported that they have been filled or have given trouble a long time ago; they may often be apparently sound. Modern dentistry, in its endeavor to save teeth by capping and various methods, not infrequently allows teeth that were better removed to remain in the alveolar process. I have had cases of dental origin which seemed to me to have their cause in capped teeth; others in which no complaint whatever was made of the teeth. In one case an obstinate empyema of the antrum was treated for a long time with daily washings through a tube passed underneath the inferior turbinate. Improvement repeatedly took place, but as soon as the washings were discontinued, the discharge of pus again became foul. No complaint was made of the teeth, but afterward the first bicuspid was extracted, when it was discovered that the alveolar process immediately around the deeper portion of the root was carious. The curette was easily passed into the antrum, all the diseased bone removed, and recovery promptly followed.

The explanation of the lack of symptoms is to be found in the fact that so long as nature has an outlet, she seldom sets up much pain. This is true in those cases of nasal as well as dental origin. Patients will not usually complain of pain but of a unilateral foul discharge. Wherever the teeth are thought to be the cause, the extraction of the teeth and the drilling out of the root cavity will usually determine whether this is or is not the case.

The patients with empyema of the antrum seek

relief either for catarrh, which they say affects one side only, or from the stopping up of the nose and the growth of polypi, due probably to the discharge of pus from the natural outlet (though the polypi may have another cause themselves and be the cause rather than the result of the antral suppuration), or from the constant discharge of foul pus from one side. Obstruction to breathing may be present, with hypertrophy of the mucous membrane of the middle turbinate and of the inferior turbinate. One-sided eczema of the anterior naris is frequent, together with disturbance of the sense of smell, a peculiar odor sense taking its place. This is due to swelling and partial closure of the olfactory fissure.

Diagnosis of Chronic Antrum Suppuration.—As pus appearing in the middle meatus can come from several sources, the question of diagnosis may present some difficulty. On examining the nose with a speculum, white, creamy looking pus will probably be seen in the front of the nose and around the lower border of the middle turbinate. Wipe this away and notice whether it quickly reforms. After it is cleansed thoroughly, lay the head over toward the opposite side, and after a few moments examine again. If pus is still present and underneath the middle portion of the middle turbinate, it is probably of antral origin, as pus from the frontal sinus or ethmoidal cells will be high up or nearer forward, nearer the infundibulum, and rather in front of the middle turbinate. The pus tends to come forward when the individual is in an upright position, while at night it flows into the nasopharynx, and in the morning is found more or less dry on the nasopharyngeal wall. This diagnosis is only presumptive and not absolute. Several examinations may be necessary, as pus may not appear in the nose at the time of the first examination. An absolute diagnosis can be made only by puncture either through the floor of the nose or through the canine fossa, or by the extraction of a tooth. The history of the case will help somewhat in determining whether it is of dental or nasal origin. By lifting the cheek with the retractor or with the finger, and thoroughly cocainizing the mucous membrane of the canine fossa directly over the second bicuspid or first molar, a good-sized canula can easily be driven with a light blow directly into the antrum cavity, or the ordinary dental drill will quickly make an opening. Warm sterile water is then syringed through the cavity, when, if pus appears at the nasal outlet, the diagnosis is positive. A positive diagnosis can also be made by puncturing the nasal wall in the manner to be described.

Transillumination with an electric lamp placed in the mouth has some diagnostic value. In case one antrum is occluded, the shadow on this side will be very much darker and may even be absent altogether. The information which transillumination gives is corroborative only and not of itself absolutely diagnostic on account of the varying thickness of antrum walls and the possible variation between the two sides. It case polypi are present they should be removed as thoroughly as possible. The prognosis must always have an element of doubt about it, inasmuch as if the condition has lasted any length of time, various accessory ethmoid cells may be involved or the frontal sinus. If the entire pus infected area can be removed or gotten into good condition, a cure will result. Where the antrum alone is involved, the prognosis is always good. The odor of the pus is no guide to the prognosis, as long-continued cases may clear up under favorable conditions. The character of the interior of the antrum has more to do with the prognosis than has the question of odor.

Treatment.—In a cavity like the antrum it is necessary, for rapid and complete recovery, to have good drainage. If there is reasonable probability that the purulent condition of the antrum is of dental origin, the offending tooth should be extracted, the opening through the alveolar process enlarged with drill and curette until the cavity can be freely syringed, and the cavity then packed with strips of gauze and syringed daily until recovery takes place. If the pus still continues after a reasonable length of time, it is evidence that the cavity of the antrum is itself involved in the diseased process and in that case it is better to do the radical operation about to be described.

In making the preliminary puncture under the anterior end of the inferior turbinate, whether for diagnosis or for treatment, some details are to be borne in mind. The point of puncture should be just behind the anterior portion of the middle third of the inferior turbinate. Cocainize thoroughly with 20 per cent. cocaine and adrenal solution, carry the point of the trocar to the proper place, and as high up as possible underneath the turbinate, and not on the floor of the nose, where the antral wall is much thicker. Either a straight or a curved canula with a trocar or a sharp beveled edge canula, straight or curved, without trocar, can be used. After finding the point for puncture, carry the canula against the outer edge of the septum so as to pierce the antral wall at as nearly right angles as possible. Hold it firmly with the fingers of the left hand, and tap lightly on its end with the mallet. After one or two light taps with the mallet, it will be felt to enter the antrum, the giving way of the sense of resistance being evident to both fingers and mallet. Move it about a little to be sure that it is in a free cavity. In some narrow antra, if puncture is made too far forward, the canula can be carried into the cheek. This is more likely to occur where the canine fossa is very much depressed. I have had this happen once and blew some air into the cheek. The experience, while devoid of danger, was an unpleasant one. In this instance puncture was made too far forward, as a subsequent puncture, the canula being inserted a little further back, discovered the presence of pus. An absolutely sterile trocar and canula is to be used,

and if no pus is present, no harm will be done. If a canula without trocar is used, be sure that it is permeable before introduction. As soon as the canula is in position, sterile water is syringed through it, when pus, if present appears in the middle meatus. If none is found, and it is an acute case, a few washings through the canula may effect a cure; hence it is desirable to leave the canula in situ, or what I regard as better, to enlarge the opening with drill or curette so that a curved canula can be easily introduced for a short time at least. The ordinary non-bulbous silver or hard rubber Eustachian catheter answers very well as a canula for daily introduction. This enlargement of the opening is usually not difficult to make, provided the area has been thoroughly anesthetized. By still further enlarging this opening under the inferior turbinate with a nasal cutting forceps of the alligator type, I have been enabled to get and maintain a good-sized opening, through which washing can be done by the patient without difficulty, and have obtained cures in cases where I had supposed a radical operation would be needed.

In all cases in which the pus has lasted for any length of time and is foul, and resists temporary treatment, more radical measures will be needed. Any obstruction to drainage in the interior of the nose should first be removed, preferably under cocaine anesthesia, and some days previously. The patient is then etherized. (If there is any suspicion of the case being dental in origin, the suspected tooth is removed and a good-sized curette passed up into the antrum cavity, through the alveolar process, the instrument being directed backward rather than absolutely vertically. The ordinary dental drill is not usually long enough or large enough. This was formerly the only method of treatment, but has many disadvantages, owing to the constant tendency of the alveolar process to close, and the consequent difficulty of maintaining an opening for a sufficient length of time to be sure that the drainage is complete and long continued enough to bring about a cure in the antrum.) A horizontal incision, one inch long, is made where the mucous membrane folds on to the cheek and at the point between the second bicuspid and first molar. The periosteum is laid bare above and below, and the edges of the wound held back with elevators; a small opening is made with the chisel, and this enlarged with chisel or cutting forceps so as to give an opening sufficiently large to put the finger into, and allow room for thorough inspection. The bleeding will be profuse at first, but is easily stopped by pressure. The mucous membrane is then inspected, and the treatment carried on according to its condition. If simply purulent it is thoroughly cleansed, curetted a little if need be, but not entirely removed unless extensively diseased, and packed with iodoform gauze. Soaking the gauze in adrenalin solution 1-10,000 will lessen the hemorrhage of the operation. In case there is granulation and extensive disease, the whole antrum area is thoroughly curetted of its mucous membrane, the natural opening into the nose either enlarged or else a new one made underneath the inferior turbinate sufficiently large so that it will never completely close, the cavity packed with iodoform gauze, and the flaps allowed to come together into place. No suturing is necessary, as long before the cavity is completely healed the mucous membrane will have united and nature will have formed what is practically new bone on the periosteum.

The after-treatment consists in daily washing with diluted antiseptic solutions, as hot boric acid solution, Seiler's solution and the like. The gauze is kept in until suppuration seems to have ceased and healthy granulation has begun to form. The opening must be maintained some time after apparent cure, as otherwise the condition may recur. The difficulty in operations of this class is not that the opening remains open but that it closes too soon. In all of my cases the bony opening even when made very large has rapidly closed. No deformity or falling in of the cheek follows this operation.

Some authors close up the opening through the canine fossa by stitching the edges of the wound together at the time of operation, and complete the after-treatment entirely through the nose. This obviates the disagreeable taste of iodoform or any other gauze, but to me has had the disadvantage that it did not allow sufficiently long inspection of the cavity. By maintaining the opening through the canine fossa for a few days, one is able to inspect the entire antrum cavity with light and see whether any shreds or bits of tissue which ought to have been removed at the primary operation still remain. If that is the case, they can be removed. Inasmuch as the edges of this wound usually unite without difficulty, and should they fail to do so, a little freshening of the edges will readily unite them, it has seemed to me an advantage to maintain this opening for a certain length of time.

The after-treatment is comparatively simple. Complete cure will usually take place though the length of time may be considerable. I have seen cases of the foulest antrum disease of probable dental origin heal with entire cessation of discharge in from three to four weeks after the opening into the canine fossa and the alveolar process. Cases of purely nasal origin are usually entirely healed in a few weeks, and if the opening into the floor of the nose is maintained for permanent drainage, there is little liability of recurrence.

A complete operation with good drainage, while it may appear more formidable and radical at the time it is done, is much more satisfactory both to operator and patient, since the time of healing is shorter and the disagreeableness of the after-treatment much less.

In cases complicated with frontal sinus disease it will occasionally, though rarely, happen that an opening may have to be kept through the canine fossa for some time. I have had one case in which a small opening was maintained for nearly two years, healing of the empyemata of both cavities finally taking place.

Acute Inflammation of the Frontal Sinus.—These occur in connection with the ordinary acute inflammations of the nasal membrane, such as acute colds in the head, grippe and the exanthemata. They are due to the extension of the inflammation along the mucous membrane, or to obstruction of the natural outlet.

The symptoms are headache, a sense of constriction in the forehead, pain over the sinuses and at the inner angle of the eye and region of the supra-orbital notch, accompanied by secretion. The secretion consists of mucus, mucopus, or it may be purulent, although acute purulent inflammation of the frontal sinus is comparatively rare. The sinus may also be acutely inflamed as a result of disease processes in the neighborhood of the middle turbinate and ethmoidal cells, which processes interfere with the natural drainage from the sinus.

Diagnosis.—This is made from the symptoms in case there is no discharge of any amount other than mucus or mucopus. If pus itself is present, it may be seen on looking into the nose, at the anterior end of the middle turbinate and quite high up. It is not always possible to differentiate inflammation of the frontal sinus from acute purulent inflammation of the antrum or acute purulent ethmoiditis, although the fact that the pus discharge is not influenced by position, is constant in amount, appearing after being wiped away, will lead to the suspicion of its coming from the frontal sinus.

Treatment.—The acute inflammation usually takes care of itself with the subsidence of the cause. Internal remedies which reduce inflammation, sprays, and frequent syringing with warm or hot saline solution, produce the best results. In case the inflammation is purulent, the removal of the anterior end of the middle turbinate and the clearing of the neighborhood of all possible obstructions will very likely bring about a cure by itself, inasmuch as the natural drainage of the cavity is downward.

Many obscure cases of headache labeled frontal neuralgia of one sort and another are due to interference with the normal ventilation of the frontal sinus. Pain may also co-exist with a certain amount of mucopurulent discharge from the sinus, the quantity of which is so small that inspection reveals no pus. Two recent cases illustrate this, both of which improved after removal of the middle turbinate.

The first was that of a physician who suffered intense headache with inability to do his work. He was taking large doses of codeia with only partial relief. Examination showed a swollen middle turbinate, the removal of which caused some relief. Following this removal it was possible a day or so later to pass a canula clear into the frontal sinus, and a considerable quantity of mucopus was washed out, after which recovery was prompt and complete.

The second case was that of a man complaining of intense pain in the region of the right eye, for which he was sure his eyes were at fault, but repeated visits to the oculist had given no relief. Examination showed a swollen middle turbinate which was promptly removed; a frontal sinus canula was then introduced, and some mucopus syringed out, with immediate subsidence of all the symptoms and no further complaint of the eyes or of headache.

Chronic Inflammation of the Frontal Sinus.—This condition is usually due to long-continued inflammatory processes in connection with ethmoiditis, polyp formation, inflammation of the antrum, or to any cause that has interfered with the natural drainage of the frontal sinus and been productive of more or less inflammation in consequence.

Symptoms.—These are a chronic discharge of more or less foul usually thick pus, accompanied by more or less pain, headache and general discomfort in the region of the sinus. Pain on external pressure may or may not be present. It is usually best elicited when pressure is made at the inner angle of the roof of the orbit, *i.e.*, on the floor of the sinus. There may be obstruction to nasal breathing owing to polyp formation or to the frequently accompanying ethmoiditis.

Diagnosis.—The diagnosis is made by inspection of the site of the nasal discharge in connection with the general symptoms. The diagnosis may be difficult, especially when polyp formation or swelling of all the adjacent mucous membrane is an accompanying feature, as it frequently is. In this case the polypi must be removed and the source of the pus explored until we are certain of its point of origin. With the probe curved in accordance with the natural course of the canal it is sometimes possible to pass it directly into the frontal sinus. While this procedure will in many cases fail, it should always be tried. Thorough cocainization and the use of suprarenal solution will help to shrink the tissues and materially aid the procedure. The diagnosis will be helped by the removal of the anterior portion of the middle turbinate. In all cases where there is even suspected trouble with the frontal sinus or where there seems a crowding together of the middle turbinal against the septum, it had better be removed. I have several times removed it for pressure symptoms either in connection with the eye or for difficult breathing, and have never regretted so doing. It at times enlarges so that it interferes materially with respiration, and whenever acute colds or congestion takes place, occupies so much room as to produce pain. The best method of removal is the following: Cocainize thoroughly, and then

blanch the tissue with 1-1,000 adrenalin. With small-sized alligator forceps make a cut at the highest part of the middle turbinate as deeply as possible. Make a counter cut on the lower border as far back as it is desired to remove the bone. Place the wire of a stout snare in the spaces made by these two cuts, and slowly tighten. The anterior half of the middle turbinate will then come away as one piece. Any portions remaining are easily removed with cutting forceps. On account of the liability of hemorrhage it is safer to pack lightly for twenty-four hours with gauze or cotton saturated in peroxide of hydrogen and oil, equal parts. The addition of the oil renders the removal of the pledget easier and is itself of some hemostatic value. The passage of a probe up into the sinus may be impossible before this is done, and quite possible afterward, owing to the additional room provided.

After the passage of the probe, an attempt should be made to introduce a canula, bent according to the shape of the probe, up into the sinus. Water can then be syringed directly into the sinus or air blown in, and the appearance of pus at the nasal end of the canal, or the presence of a foul odor, will render the diagnosis certain. The sensations of the patient will be of material aid in determining whether the canula or probe is really in the sinus; since it is very easy to pass the instrument into some of the anterior ethmoidal cells and imagine it to be in the sinus. I have found the sensations of the patient, as to whether the syringed fluid or air were really in the sinus, quite reliable in the main, though of course sometimes misleading.

Treatment.—Given a diagnosis, what is to be done? This will depend on various circumstances, such as the age of the patient, the long standing of the disease, and the desire of the patient for a radical cure. There are two methods of operation—the internal or nasal, and the external.

The Internal Operation.—This consists in the endeavor to cure the disease through the nose by the establishment of direct gravity drainage as complete as possible, in the way indicated under diagnosis. Remove the middle turbinate and all obstacles to drainage that can be removed, and then carry a canula up into the sinus as far as possible and syringe daily with a cleansing solution. I have found 1-8,000 or 1-10,000 corrosive sublimate, 50 per cent. enzymol or alkalol to be most efficient. The corrosive should be followed by an alkaline douche through the nasal cavities and pharynx, to offset its irritant effect upon the tissues. Sometimes a cure seems to be effected in this way, or else the discharge diminishes very materially, and the disease ceasing to be a source of discomfort to the patient, he passes out of observation, satisfied with a condition in which the odor has ceased and the headache and pain are no longer troublesome. In many persons one has to be content with this method of treatment, which always results in improvement, though not always in an absolute cure.

The External Operation.—When an absolute cure is desired, or when there are symptoms of pressure, continued headache, pus absorption with increase of temperature and symptoms indicating inefficient drainage, external operation should be considered and advised. Although, if the bone destruction is considerable and the ethmoid cells are extensively diseased, as they may be, an absolute cure may fail or be attained only after a long time, nevertheless, in the majority of cases the cure will be complete, there is no appreciable external deformity, the operation is practically devoid of risk, and the period of after-treatment is not extremely long.

Method.—There are a number of external operations, but I shall describe only one, since that one is generally feasible (though not as radical as the recently described operation of Killian) and has, to my mind, more to recommend it than any other.

The diagnosis being sure, the eyebrow of the affected eye is shaved and the skin rendered aseptic. As the bleeding is considerable from this operation, it is a good plan to place a tampon in the nasopharynx at the time of the operation, so that all the blood will pass out through the front of the nose. A curved incision is then made from just inside the supra-orbital notch along the lower third of the eyebrow region and as far as or a little below the root of the nose. The periosteum is laid bare and the edges of the wound held back by retractors. With a small chisel an opening is now made at about the middle of the incision in the direction of the sinus, and continued until the sinus is reached. The operator will occasionally be surprised at the depth he will have to chisel before reaching the sinus, as the wall is comparatively thick at this point. As soon as an opening is found, it should be explored with the probe so as to be sure which sinus has been opened since the division line is not always in the middle. If the bone be opened immediately above the root of the nose in the angle between the inner third of the supra-orbital margin and the mesial plane of the forehead, a sinus, if present, will always be opened up. The presence or absence of pus and granulation tissue and the character of the mucous lining are next determined. This being accomplished, the opening is enlarged sufficiently to render all parts accessible to the probe or curette, and the sinus curetted or not in accordance with its condition. If extensively degenerated it should be vigorously curetted and all its ramifications followed up; otherwise considerable diseased tissue will be left behind. Hunt especially for pockets. As soon as this is done, the natural opening into the nose through the frontonasal canal should be explored with the probe and then enlarged with the curette, so as to make the largest opening possible without injury to any other struc-

tures. If the opening with the curette is made outwards and backwards there is little danger of doing any damage, and at the same time the adjacent anterior ethmoidial cells, which are almost always affected, can be reached and opened. As this opening is essential to drainage, and gravity drainage favors rapid healing, it should be made as large as possible, and all cells broken down. The little finger in the nose will be a guide to the direction of both probe and curette. To maintain the opening down into the nose, a good sized rubber drainage tube is next inserted, one end appearing at the nasal entrance and the other at the sinus end of the external wound. This should be maintained for a week or ten days so as to keep the opening into the nose a sufficient length of time during the process of healing. The question of the closing of the external wound must next be decided. If one could be sure that all the diseased tissue had been removed and the process had not existed too long, and there was little or no bone destruction, the external wound might be closed. There is, however, some danger of recurrence from re-infection from the nose, and as a result of several years' experience, I now favor the maintainance of the external opening and the complete obliteration of the sinus cavities, as in some of my former cases in which I allowed the wound to close after a period of even one or two weeks, I was obliged to re-open. In one instance there was no recurrence for three years, when, during an attack of grippe, the sinus became re-infected. A large opening was then made with thorough removal of all softened bone, and the case treated by the method of obliteration. This requires a much longer time in the after-treatment, from two to four or five months being necessary according to the rapidity of healing and the size of the sinus. It is packed every other day with gauze tampons, especial care being taken to maintain the external opening. When healing has finally taken place, both sinuses are firmly filled and the external deformity is practically nil. Should there be extensive ethmoiditis, the length of time for healing will be materially lengthened. Here it is better at the time of operation to destroy every cell which can possibly be reached. Although apparent healing is obtained in much shorter time by closure of the wound and the reliance on nasal drainage, and although I have had several apparently satisfactory cures by this method, yet the number of recurrences has been considerable, so that I most empathically recommend the endeavor to obliterate the sinus cavity.

Where the sinus is very, very large, it has been recommended to do the operation above the supra-orbital ridge. Take away the entire front wall of the sinus to allow the soft parts to sink in, doing immediate closure except at one angle of the wound, and filling any deformity which may remain by the injection of paraffin. Here the amount of deformity is much less than would be expected, as the subcutaneous tissue seems to expand to a certain degree so that the sinking in is comparatively small.

A much more radical operation, that of Killian, has recently been recommended in which the entire removal of the floor of the sinus and all its anterior wall, with the exception of a slight bridge corresponding to the supra-orbital ridge, with immediate closure of the wound, is recommended. This operation is very extensive, gives rise to considerable deformity, and has, as yet, not received any great favor in this country, although as now perfected by its author, it is said to be free from the danger of recurrences, and to have less deformity than would be expected.

Sphenoid sinus disease was formerly thought to be comparatively rare as a primary condition, but recent investigations have shown that the sphenoid is invaded by purulent processes more frequently than was formerly supposed. In many subjects it can be probed and examined with comparative readiness. In others, the removal of a portion of the middle turbinate is necessary. When pus is present, the anterior wall will have to be removed in order to maintain drainage, as the natural opening is at the most superior part of the sphenoid cavity.

The *anterior ethmoidal cells* as such may be primarily involved and the condition of purulent ethmoiditis be present. This will usually be accompanied by formation of polypi, bare bone, and other evidences of disease of the walls of the individual cells. Remove with a snare and curette all the polyps which are present, break down as many of the individual cells as possible under good illumination, and clear them out. Repeated operations of this type will probably in time so far clear up the case as to render the patient's condition practically normal, although it must be conceded that many times there still remains more or less purulent discharge. As, however, the condition of these cases is invariably helped, the patient's condition is so much better than his former one that the occasional discharge of a little pus from the nose ceases to be an annoyance to him.

So much then for a rapid résumé of the individual affections. In many instances one has to do not with the simple empyema of one cavity but an empyema of one or more cavities, due to the fact that they easily infect one another. The frontal sinus not infrequently infects the antrum and, indeed, in those cases in which the sinus seems to be the only cavity diseased, it has seemed to me, as a result of experience, that it is always safer to open and provide for the time being a drain from the antrum, inasmuch as during the healing of the frontal sinus inflammation, sufficient pus may drain into the antrum from the infundibulum or hiatus to infect that, and a secondary antrum inflammation be produced at the same time that the cure of the frontal sinus inflammation is taking place.

Briefly to sum up, the patient presents himself to us with pus coming from one or both sides of the nose. What is the plan of procedure?

1. Clear the nose of all visible sources of obstruction, especially polypi, which easily grow or are maintained wherever and whenever surfaces are bathed with pus.

2. Examine the teeth to see whether there is anything in the way of probable dental origin of sinus trouble.

3. With the nose carefully cleaned, endeavor to ascertain, if possible, by inspection whether the pus seems to come from the antrum or from the frontal sinus or from various points in the ethmoid cells.

4. If the apparatus for the same is at hand, try transillumination, not only for the antrum but also for the frontal sinus as well.

5. Make an exploratory puncture of the antrum in the manner I have already described.

6. If the antrum is free, explore the frontal sinus for the pus, try to wash out with the canula, or to pass a probe, if possible. If not, next remove the middle turbinate. If the antrum contains pus, endeavor to cure it by washing out for a reasonable length of time. Failing in that, do a radical operation. Remember that the better the drainage, the faster the cure, and do not content yourself with a small pin-hole opening made by a small dental drill through a root cavity.

7. If the pus appears to come from the frontal, wash it out with a canula if possible, pursuing this treament a reasonable length of time, and being guided as to the question of a future operation somewhat by the feelings of the patient; somewhat by the annoyance of the discharge; somewhat by the chronicity of the case, remembering that the frontal sinus is a simple, large, irregular cavity, that it may communicate with one or more of the anterior ethmoidal cells and that the operation, while not of itself especially serious, may mean a long and more or less prolonged course of after-treatment. Do not fail to do it or have someone else do it in case it seems indicated.

8. Where there are several empyemata it is better to clear out the nose as thoroughly as possible and then, under ether, do the operation on all the cavities at once.

Careful study of the individual case over a sufficient length of time will usually bring one finally to success and the results are worth all the time and effort spent upon them. So far as the general practitioner is concerned, it seems to me that when it comes to the operations, they had best be done by someone skilled in that line, although it is essential that the general practitioner to whom the patient in all probability originally comes, should know sufficient about the case intelligently to advise his patient and should at least have a good mental picture of the pathological processes going on.

When more attention is paid by the average practitioner to the real pathological conditions present in the nose, and they are not all dismissed under the heading of catarrh or neuralgia, progress will have been made.

Note.—In the preparation of the foregoing the author has drawn somewhat from the chapters covering the same subject in his book, "Nose and Throat Work for the General Practitioner."

MEDICAL PROGRESS.

MEDICINE.

Excretion of Purin Bases in Feces.—According to A. Schittenhelm (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5 and 6), the normal feces of man always contain purin bodies, but the amount is small and very variable. There seems to be a direct relation to the amount of dry residue: If this is large, the amount of purin bodies is also relatively high. They are also present in the feces after an absolute carbohydrate diet, since the intestinal contents will here contain more bacteria and a more active desquamation of epithelial cells will take place from the intestinal walls. Food rich in nuclein, such as thymus, will also increase the amount of purin, but the bases normally present in muscle seem to be well absorbed. There is generally a decided increase with diarrhea, a diminution in constipation, since absorption is increased, and since the prolonged action of bacteria will convert amniopurin into oxypurin, which passes more readily through the intestinal walls. A diminution is also common with pancreatic disease and in alcoholic stools. Uric acid is generally found in meconium, but never in the feces of extra-uterine life. The purin bases in the feces are chiefly present in a free state, but a small percentage is combined with nuclein and another portion with pentose and hexose. Purin bases occur regularly in pancreatic secretion, but never in bile unless the biliary passages are inflamed. Adenin and guanin are abundant in the walls of the intestines, together with smaller amounts of xanthin and hypoxanthin. Probably a large percentage of the purin bases in the feces is derived from this source.

Absorption of Potassium Iodide from the Stomach.—More than twenty years ago a new method was introduced, to determine the degree of absorption which goes on from the stomach in health and disease. The patient received a capsule containing potassium iodide, and the saliva and urine were then tested at stated intervals for this salt. The value of this method has been frequently doubted, so that the experiments of K. H. Baas (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5 and 6) are of the greatest practical importance. This author discovered that a moderate dose of morphine caused a spasm of the pylorus, so that nothing can leave the stomach by way of the pylorus while the effect lasts. The urine of dogs and rabbits which received a dose of morphine before the iodide was administered, gave a very late iodine reaction, while without morphine the test was positive in a few minutes. In man, a closure of the pylorus also takes place after morphine, and there can be no doubt that iodide of potassium is not at all absorbed from the stomach, and hence unfit for testing the motility.

Notes on Diabetes.—From the careful analysis of of a severe case of diabetes, A. R. Mandel and G. Lusk (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5

and 6), conclude that the relation of dextrose to nitrogen in urine is of great prognostic value. In absolute diabetes, such as results from the injection of phlorhizin into animals, the preparation is generally 3.65 to 1; it follows, if the same figures are obtained in human beings, after a simple fat-meat diet, that the intolerance for sugar is complete and the prognosis very bad. With less excretion of sugar in proportion to the nitrogen, a certain amount of improvement is always possible. The presence of acetone, diacetic and oxybutyric acids in the urine need not always be alarming, for patients have been known to excrete 5 to 6 grams of acetone and 30 to 40 grams of oxybutyric acid, and still improve considerably. There is no reason to believe that the ingested fat participates in the formation of sugar, even if figures higher than 3.65:1 are obtained; it is more likely that the excess of sugar is derived from proteid taken the day before, since the nitrogen of proteids is always excreted more rapidly. Yeast had no influence whatever on the amount of sugar. When the patient was fed on oatmeal and levulose, 85 per cent. of the starch of the former and 80 per cent. of the latter appeared in the urine as sugar. Recently Clowes has constructed a formula for determining the percentage of sugar in urine, if the specific gravity and freezing-point are known, but the authors have found errors up to 1.5 per cent., which make this method incorrect. It is a strange fact that in dogs with extirpated pancreas, the D:N ration never exceeds 2.8:1; this is best explained by assuming that after phlorhizin, the kidneys are able to decompose a compound of proteid and dextrose which is normally burnt up in animals which show the proportion 2.8:1.

Ascaris in Biliary Passages.—It is well-known that the *Ascaris* possesses the property of forcing its way through narrow openings to a high degree, and it is believed by many that the worm can get into the biliary passages and give rise to symptoms of gallstone colic and sepsis. That this is indeed possible is demonstrated by a patient of EBSTEIN (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5 and 6). This patient suffered from all the symptoms of obstructive jaundice and biliary infection until she passed several worms, one of which clearly showed a deep constriction near its head, proving that it had lodged in a narrow canal. The patient recovered completely and had no recurrence for eight years.

Relation of Articular Rheumatism to Angina.—The type of angina, which most frequently precedes an attack of acute articular rheumatism is the chronic desquamative type of tonsillitis, according to D. GÜRICH (*Münch. med. Woch.*, November 22, 1904). That there must be an intimate relation between the two conditions is proven by the following: Several patients suffering from recurrent rheumatism were treated with the salicyates, with excellent, but only temporary relief. It then occurred to the author to curette out the tonsillar recesses and ever since the operation, the patients, have remained free from rheumatism. The symptoms of the tonsillar affection are neuralgia, fetor from the mouth apparently without cause, and often globus hystericus. It is often difficult to see the crypts with their stagnating contents, since they are lodged in the fossa behind the tonsil proper.

Etiology of Facial Paralysis.—Undoubtedly exposure to cold is the most common cause of facial paralysis. D. STENGER (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5 and 6) does not, however, believe that the nerve is easily affected by cold at its most exposed portion, the stylomastoid foramen, but thinks it is particularly vulnerable in its course within the tympanic cavity where it often lacks its bony covering. The sudden change of temperature is followed by an exudation into the nerve-sheath which results in paralysis owing to the pressure it exerts upon the nerve. If a rhinoscopic examination be made in cases suffering from facial paralysis, the side and the Eustachian tubes should be open, so that a cold draught of air can easily reach the tympanic cavity and hence the facial nerve.

Congenital Icterus with Splenic Tumor.—A most peculiar pathological condition came under the observation of H. V. KRANNHALS (*Deutsch. Arch. f. klin. Med.*, Vol. 81, Nos. 5 and 6). A patient presented himself for jaundice and its concomitant symptoms, which had troubled him since early childhood. Otherwise he felt perfectly well, and physical examination was negative, except for a fairly large, firm spleen. Further questioning elicited the remarkable fact that several sisters and brothers, his mother, grandmother and aunt, and some other more distant relatives were just as yellow and also complained of an abdominal tumor. The urine of the patient contained no pathological elements except bile; his feces were never acholic and his blood showed a moderate anemia with polychromatophilia. The pathology of the condition is not known since autopsy records are not at hand, but it is likely that the enlargement of the spleen is the primary condition, and that the bile in the serum results from the action of some toxin on the liver.

The Copper Treatment of Water.—This new method of antisepsis has been investigated by HENRY KRAEMER (*American Journal of Pharmacy*, December, 1904). For testing copper sulphate two aqueous solutions of strengths 1 in 100,000 and 1 in 1,000,000 were employed, of the total number of organisms exposed there was a reduction of 99 per cent. with the stronger solution and of 90 per cent. with the weaker. For testing colloidal copper, strips of copper foil were used, and 85 to 97 per cent. of all organisms were destroyed. Special tests were made of the colon and typhoid bacilli, using pure cultures developed in bouillon from eighteen to twenty-four hours. Two 3-millimeter loops of each were added to 200 c.c. of each of the following: (1) Ordinary tap water; (2) tap water which was filtered; (3) filtered tap water, which, after treatment with potassium permanganate, was distilled three times in apparatus constructed entirely of glass. All the solutions had been sterilized at 110° C., for thirty minutes. After adding the cultures a portion of each solution was separated for control, and copper foil added to the rest. They were kept at 35° to 37° C., and plates were made at the time of the culture, and after four, eight, twenty-four and forty-eight hours. The plates were kept at constant temperature for two days in the case of *Bacillus coli*, and for five days in the case of *Bacillus typhosus*. There were no organisms of either kind on any of the plates taken after exposure to the copper, even after only four hours, though the plates taken at the time of adding the culture showed from 4,410 to 11,246 of *Bacillus coli*, and 1,400 to 3,986 of *Bacillus typhosus*. Plates from the controls showed from one to two million *Bacillus coli* at the end of forty-eight hours; in the *Bacillus typhosus* controls there were practically the same number of organisms whenever the cultures were made during the forty-eight hours. It may be concluded, then, that the colon and typhoid bacillus are completely destroyed by placing

clean copper foil in the water containing them. By adding copper foil about 3½ inches square per quart and allowing to stand over night, any householder can purify water.

Scarlatiniform Rashes.—The primary rash of scarlet fever, as observed by A. D. HEATH (*Birmingh. Med. Rev.*, October, 1904), is bright brick-red, appears first on chest, neck and upper arms, spreads downward, and is fully developed in about two days. It has generally completely disappeared in a week. The rest of the condition is made up of closely-set minute red papules surrounded by erythema. The face is flushed, the region around the mouth quite pale, and the typical punctiform eruption skips the face except sometimes the forehead and temples. Over the flushed surface of the face a fine powdery desquamation, like the bloom of a peach, soon develops. Desquamation, usually well marked at the end of a week, begins on the face, neck and chest, and lasts a long time.

The eruption of German measles appears first on the face as scattered pinkish-red spots, darker at the center than at the periphery. It spreads rapidly and may reach the feet in twenty-four hours. On the trunk and limbs the spots may coalesce and may resemble the rash of scarlet fever. There may be no desquamation, or it may be furfuraceous, and usually lasts only two or three days. In measles the rash appears, first, on the temples, at the hair margin of the forehead, behind the ears, and at the upper part of the neck. The spots are distinctly papular, may become purplish, may be crescentic in shape, and may occur in groups. The eruption spreads downward and reaches its maximum on the third day. The face is flushed and spotted, and the region about the mouth may be thickly covered with papules. There is a condition, generally met with in summer, in which a roseola appears suddenly on neck, limbs and trunk without prodromal symptoms or glandular enlargement. Among those erythematous rashes which are classed as skin diseases, are those from friction, heat, cold, certain rays of light, and from various irritants such as turpentine and mustard. Children are very subject to transitory patchy erythema, especially from teething or worms. Enemata may be followed by brilliant scarlatiniform eruptions, more commonly if of soap and water; there may be a great sense of heat in the skin, though the thermometer shows no rise in temperature. Scarlatiniform rashes may also be met with after such drugs as copaiba, antipyrin, belladonna, chloral hydrate or quinine, and in diphtheria, influenza and typhoid fever. The writer has seen extensive rashes following the administration of diphtheria antitoxin, and in uremia, septic conditions, acute rheumatism and tonsillitis. The latter, if on the chest, is particularly difficult to distinguish from scarlet fever. A rarer form of eruption is erythema scarlatiniforme, in which a bright scarlatiniform eruption spreads rapidly over the body, often becoming universal in twenty-four hours. Desquamation begins early, is very free, and may include hair and nails. Frequent relapse is common.

The Protozoan of Scarlet Fever.—An important communication on this subject is published by C. W. DUVAL (*Univ. Penn. Med. Bull.*, November, 1904) on his researches on the "bodies" first described by Mallory in 1903 as being found in the skin of autopsied scarlet fever cases. Their presence in the fresh serum was demonstrated, the inquiry being undertaken on the belief that if these "bodies" lying free in the intercellular lymph spaces represented stages in the life cycle of a protozoan, they could be drawn into the contents of an artificially produced vesicle. In all, 18 cases were studied and the protozoan-like bodies were found in five among those last examined and during the stage of the disease when the eruption was at its height. They were not found in the vesical contents of normal individuals. Furthermore, a careful search of the contents of artificial vesicles produced on chemical injured skin failed to show them. Again, the bodies were not found in the serum from artificial vesicles produced on the skin of other acute exanthemata. In the production of the vesicle aqua ammonia fortior was employed after trials with a number of other agents. The serum in these vesicles is free from leucocytes and red cells.

Laparotomy in Typhoid.—Four cases, with a successful result in all, are reported by FITCH, of the Massachusetts General Hospital (*Boston Med. and Surg. Jour.*, December 8, 1904). Two of these were for perforation. In one of them, the leucocytes showed a fall, contrary to the rule, from 11,000 to 4,200. One was for appendicitis, and one for ruptured pus tube. These were the only typhoids during the year which came to operation, so that the statistics are remarkably good, and very encouraging. In the case of perforation reported in detail, operation was done within four hours, yet the belly contained free intestinal contents.

Treatment of Pneumonia in Adults.—M. MANGES (*Med. Rec.*, December 10, 1904) says that the tendency is to forget that this is a general disease in which there may be great disparity between the local signs and the patient's general condition, severe cases sometimes giving evidence of but slight lung involvement and *vice versa*. So far, the attempts to devise a specific treatment have not been successful, and but little is to be expected in this direction, for the pneumococcus is not always a constant quantity, and various other organisms, including the influenza bacillus, which, of late, has markedly influenced the disease, may be present in mixed infections. The author's detailed discussion of the treatment is subdivided under the following heads: (1) To maintain life. The careful management of the stomach by a suitable diet to prevent distention and the consequent cardiac embarrassment is of the highest importance. It is wiser to give too little food than too much and to avoid all carbonated beverages. (2) To support the heart. The best drugs for this purpose are strychnine, caffeine, alcohol, camphor, and ergot. If prompt results are not obtained all the drugs should be given hypodermatically and in sufficient amount to exert their physiological action. Views as to the value of large doses of digitalis are still divided. Adrenalin, the precordial ice-bag, cupping and venesection are also useful measures. (3) To control hyperpyrexia. Large flat ice-bags on the chest will be found useful, but care is necessary to avoid producing intercostal neuritis. Cold sponging and packs are of value, but must be used with caution, and cold baths are contraindicated. The rational use of coal tar antipyretics in small doses may contribute much to the patient's comfort. (4) To relieve suffering. The cough and pain are combated by the use of small doses of morphine hypodermatically, or of heroin hydrochlorate. The Paquelin cautery is of great value for the pleuritic stitches. Oxygen is probably of less value than is generally supposed. Every effort should be made to secure as much sleep for the patient as possible. (5) To control complications. Pleurisy with effusion, empyema, pericarditis, endocarditis, etc., require the treatment ordinarily pursued.

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AN APPEAL FOR AID IN THE FIGHT AGAINST TUBERCULOSIS.

THE appeal recently issued by the National Association for the Study and Prevention of Tuberculosis is a document pregnant with meaning for the future of the country. For years we have watched for the organization of a great national movement, backed by sanitary reformers possessing brains, experience and determination, and commanding the respect of the members of the medical profession who know better than all others the terrible evils resulting from the spread of pulmonary tuberculosis. Here and there local societies have undertaken to grapple with the problem; now and again a municipal or a State health board, wise in its generation, has sent an advance guard against the enemy; but an authoritative national body, ready and able to give sanction to, and by promoting general cooperation, to guarantee the permanent success of local effort was lacking. At last such a body has been formed. The National Association for the Study and Prevention of Tuberculosis, presided over by Trudeau, seconded by Osler, Biggs, Sternberg, Welch, Wyman, Vaughan, Knopf, Flick, and a score more of men of exceptional training and influence, has entered upon a campaign of education and prophylaxis which must not end until the nation is rescued.

The history of tuberculosis does not need to be retold here. That ignorant consumptives are abroad in the land, sowing everywhere without thought or care, the seed of fatal infection, is a truth which is brought home to each one of us by tragical evidence every day. Nor is it necessary here to dwell upon methods for the treatment of tuberculosis, nor to discuss the relative importance of the various agencies by means of which the spread of tuberculosis can be prevented. In the text of the Association, the eradication of tuberculosis is said to be "an issue involving education, sacrifice, patience, improved sanitation and the responsibility of the individual to the cause of public health." The National Association, it is true, is "organized and equipped for a campaign of study and education"; but the ultimate and lasting success of the movement hinges upon the cooperation of cities, States and the nation—not necessarily through existing governmental agencies, but rather through the enlightened leadership of the National Association for the Study and Prevention of Tuberculosis itself. The saving of human life on a gigantic scale is the aim; the National Association is the guide; the local society is the weapon which will prove most effective in the great fight.

We are informed that the National Association will endeavor to effect "the personal and financial cooperation of those laboring to bring about a new conception of the dangers of ignorance," and that "local societies are to be started with the same aims." It is in this connection that we wish to say a word to the Association and to the medical profession. It should be the avowed purpose of the Association to bring about the organization of a society for every locality or district. The consumptive is migratory, and effective education and control will never exist until the country is organized systematically, county by county and State by State, so that there shall not exist within the United States a place where ignorance and the sanitary vices which have their root in ignorance can find a foothold.

To the medical profession we have this to say: The National Association is now properly started under trustworthy auspices. In the formation of local societies the medical profession is bound to occupy the leadership; and it behooves medical men who are sincere, and in the truest sense

patriotic, to protect struggling local associations, on the one hand against indifference, which is almost criminal, and on the other, against the unreal enthusiasm and the hurtful influence of self-advertisement. Local organizations will be transient or permanent, useless or efficient, according to the characters and purpose of their promoters. Not all physicians can hope to be recognized as leaders, either in the national or local bodies, but all can be sincere well-wishers to the movement, tireless workers in the cause of humanity. It rests with the medical profession to teach their fellows what sacrifice and patience are worth in a movement which is destined to find its place in history among the greatest efforts for the preservation of the race.

THE ROLE OF THE OXIDASES IN THE ANIMAL ECONOMY.

"Life is a series of oxidations," has become an important formula of modern physiology. The manifestation of heat and visible motion, in which respects alone life reveals itself to physicist and chemist, has been amply explained in the basis of an oxidation of the complex organic compounds out of which the tissues are built.

Not content, however, with this conclusion, physiologists have probed more deeply into the mechanism of vital oxidations, and discovered that these processes are brought about by certain unorganized ferments present in the tissues, and called oxidases. The discovery of these substances has opened up a glittering world of possibilities to the investigator.

The oxidases are catalytic agents possessing the property of uniting with molecular oxygen and delivering it in its atomic or active form to the tissues. These enzymes are present in all parts of the body and have been discovered even in the milk and urine. They have not been isolated in their pure state, but their presence has been definitely demonstrated by a variety of well-known tests.

The practical importance of investigation on the nature of the oxidases and their mode of operation can not be overestimated. It was not entirely poetic imagination that inspired Jacques Loeb to predict that through the oxidases one may in time be able to control life as the artist governs the keys of the piano. Not merely the normal course of life, but also that vast gamut of diseases characterized by metabolic derangements, might be controlled if we only knew how to favor or retard the action of the oxidases.

Recent researches in this domain, valuable in themselves, are still more valuable as an earnest of the rich harvest which the future holds. L. Liebermann has pointed out a close analogy between colloidal platinum and the oxidases. The former, which has for a long time been known to act as a catalytic agent in the decomposition of peroxide of hydrogen, owes this power to the active oxygen which it contains. The colloidal solutions of platinum possess the capacity of activating molecular oxygen. In this process loose compounds of platinum and oxygen are formed. The catalytic power of colloidal platinum is increased by the passage through it of some inert gas, such as hydrogen or nitrogen, which action is attributed to the mechanical agitation produced by the streaming gas which by breaking up large particles of the platinum, renders this capable of uniting with a large amount of oxygen. The surface attraction of the large extent of surface represented in the very fine particles present in solution, is capable of tearing asunder the constituents of the inactive oxygen molecule.

It is highly probable that the oxidases act in a similar manner. If this is really the case, then physical phenomena would play a large part in either retarding or accelerating the action of the oxidases. May not the supposed beneficial effects which follow vibratile stimulation of the organism be possibly connected with some mechanical influence on the oxidases? May not the normal rhythmic beat of the heart and muscular exercise favor the metabolic processes of the body by acting in a mechanical way upon the oxidases?

In this connection the recent experiments of A. Lowy and F. Müller are of interest. In studying the influence of sea-climate and sea-bathing upon metabolism, these investigators found that the latter is increased by west winds and an increased force of the waves, which act as physical stimuli.

The experiments of L. Liebermann on colloidal platinum also open up a vast field of possibility in the domain of pathology. This observer states that the mechanism of the oxidative reaction helps to explain certain phenomena connected with the destruction of foreign and toxic bodies in the organism. Certain pathogenic bacteria are rendered innocuous by uniting with protective bodies normally present in the organism, the complements of Ehrlich. But these act so slowly that they cannot fortify the organism against an intoxication. On this account another body is

necessary, the amboceptor (immune body), which will unfold the activity of the complement. The analogy to the phenomena of the oxidative reaction is as follows: The pathogenic agent corresponds to the tissue, the complement to the active oxygen, and the amboceptor to the oxidase. The amboceptor is thus nothing more than a catalyzer.

That catalytic agents akin to the oxidases play an eminent rôle in subduing septic processes in the organism is indicated by the recent researches of M. J. Hekman and H. J. Hamburger. These observers sought an experimental demonstration of the clinical experience that colloidal silver has a favorable effect in various forms of bacteria invasion. They found that while solutions of collargolum of a low concentration increase the hemolytic power of staphylotoxin, solutions of a higher concentration entirely inhibit hemolysis. The authors attribute the inhibitory action of colloidal silver to some catalytic effect. In view of Liebermann's experiments on colloidal platinum, this conclusion is probably correct.

SOME MEDICAL JESTING.

The *Münchener medizinische Wochenschrift* issued its usual joke number about a month ago, this time in honor of the celebration of the seventieth anniversary of the Foundation of the Physicians' Union of Munich. Though it has some excellent medical jesting, we are inclined to think that it is not up to its usual standard, and many of the jokes seem heavy and far-fetched.

Several of the articles, however, are excellent, probably the best is that on the physician's wife. A number of very practical bits of advice are given to that wondrous creature from whom so much is expected and to whom, it is said, so much of blessing comes, as the helpmate of the doctor. She is reminded that if she should be in want of certain things in the household, there are a number of instruments to be found in the doctor's office that can well supply many ordinary needs. Amputation saws may be used very effectively for making kindling wood and will even be found of excellent service in sawing joints in the kiethen, if no other means be readily available. She is reminded too that for toilet purposes, if the ordinary hand-mirror be mislaid, the forehead-mirror of the physician, or, better still, for the minute facial toilette the laryngeal mirror of the specialist can be brought into requisition. In case the ordinary chafing dish should fail to work, it can always be remembered that the doctor has an alcohol lamp, and that along side it will usually be found the funnel with filter paper meant originally for a quite different use, but that may well be employed for many household purposes. This last is an especially German touch.

She is told that of course there are many interesting books in the doctor's library and that it is only the proper thing that a doctor's wife should know as much as possible about medicine, and especially about the seamy side of it, and it is suggested that she might well occupy the time during which he is absent on night calls by sitting up for him and making herself familiar with the contents of particular shelves of his library. It is not added that this may give rise to a number of ideas and resultants that are no joke, but then every one must learn by her own experience, though it has been said that wise people sometimes learn by other peoples' experience.

There is an excellent take-off on an especially rare fracture of the wrist which has not yet occured, as illustrated by the Roentgen radiogram which fails utterly, alas! (as they sometimes do) to illustrate. The leading article consists of the romance of a white blood corpuscle, an eosinophile, the red coloration it effects being or seeming to be something of the the same sort of evidence of the feminity of these cells that the presence of a large head of henna-colored red hair would be among human beings. The poor white cell has the usual fate of those in love and finds many obstacles in the path of union with her beloved pyramidal cell whom at first she detested very much. Unfortunately the cataclysm in her affairs is brought about by the occurence of a urethral blenorrhagia in the human being of which she is one of the cell colony and carried away by positive chemotaxis as by another Johnstown flood, she finds death and destruction with many of her sisters as the result of submersion beneath waves of a silver solution in the urethra.

ECHOES AND NEWS.

NEW YORK.

Honors for Dr. Carl Beck.—The Society of Medical Jurisprudence recently elected Dr. Beck its President for 1905. He has also been elected Corresponding Member of the Medical Society of Munich, an honor never before conferred upon an American.

The Eastern Medical Society.—At the annual election of the Eastern Medical Society, held December 9, the following officers were chosen for 1905: Ephraim K. Browd, M.D., President; A. Hymanson, M.D., First Vice-President; Charles Goodman, M.D., Second Vice-President; A. Rovinsky, M.D., Treasurer; M. M.

Stark, M.D., Recording Secretary, and Emil Altmark, M.D., Corresponding Secretary.

Seney Hospital Secures Gift.—The Board of Managers of the Methodist Episcopal Hospital, Seventh Avenue and Seventh Street, Brooklyn, has announced that it has succeeded in raising the fund of $300,000 necessary to secure to the hospital the gift of $125,000 from Mr. and Mrs. William Halls, Jr. The managers will now try to raise a second fund of $200,000. The institution is better known as the Seney Hospital, it having been founded by George I. Seney in 1881.

Dr. Dunning Retires.—Dr. Emily Dunning, who has served for two years as an ambulance surgeon attached to Gouverneur Hospital, received a set of engrossed resolutions from the police and hospital officials with whom she has worked. Miss Dunning has been the only woman ambulance surgeon in the city, having been appointed to the Gouverneur Hospital staff on January 1, 1903. She retired on December 17, and will be married shortly to Dr. Benjamin Stockwell Barringer, former House Physician in a New York hospital.

Vaccination of School Children.—"The Present Status of the Law Relating to the Vaccination of School Children" was the subject of the paper read on December 15, before the conference of sanitary officers of the State, by Deputy Attorney-General Sanford T. Church. After quoting from a decision of Judge Vann in a case involving compulsory vaccination, Mr. Church said: "We may therefore unqualifiedly assert that the statute requiring all children to become vaccinated as a precedent to their attendance upon the public schools of this State is valid and constitutional, and a proper exercise of the police power."

Memorial to Dr. William R. Pryor.—The Medical Board of St. Vincent's Hospital, at the regular quarterly meeting held December 13, 1904, caused the following minute to be entered on its records and sent copies to the bereaved family and to the medical magazines:

"The members of the Medical Board of St. Vincent's Hospital have learned with profound regret of the death of their colleague, Dr. William R. Pryor.

"Of undaunted courage and indomitable perseverance, Dr. Pryor followed truth unflinchingly and the highest ideals without faltering. These qualities, coupled with technical skill of the first order and an unusually acute power and wide range of observation, had won for him an enviable reputation and a commanding eminence in his special field.

"His fine enthusiasm, his frankness and directness of purpose, his readiness to lend a helping hand, were enduring qualites which gained for him the highest prizes of ambition: the gratitude of his patients, the love and respect of his associates. Frederick S. Dennis, M.D., and George D. Stewart, M.D., *Committee.*"

Urgent Needs of Our Hospitals.—That there is real danger of the private hospitals of this city being forced, owing to the lack of funds, to abandon private management and rely for support on the city treasury is set forth by Frank Tucker, Vice-President of the Provident Loan Society, in an article in the last issue of *Charities*. Mr. Tucker says in part: "The critical financial condition in which many of the hospitals of New York under private management find themselves is stated in an emphatic and not to be questioned manner in the thirty-sixth annual report of the Presbyterian Hospital just issued. This hospital, one of the 'big four' in the New York hospital group, has long been noted for its progressive administration, its splendid plant, its famous training school for nurses, and its broad and liberal policy toward the sick without means to pay for medical and surgical treatment. Where is the remedy to be found? The writer again answers the question by urging the raising of a large endowment fund, the income to be used in supplementing the present incomes of the group of New York hospitals which find themselves in the same financial condition as the Presbyterian, the fund to be administered by an independent board of men and women selected for their knowledge of social conditions."

Tuberculosis Directory.—In the Directory of Institutions and Societies Dealing with Tuberculosis, which is about to be issued jointly by the Committee on the Prevention of Tuberculosis of the New York Charity Organization Society and the National Association for the Study and Prevention of Tuberculosis, the attempt is made for the first time to present a bird's-eye view of all the organized work that is being done in the United States and Canada for the care and cure of consumptives and the prevention of consumption.

The Directory is an attractive volume of 270 pages and some sixty illustrations. Part I is by far the most important section of the book, consisting as it does of descriptions and views of the 125 hospitals and sanatoriums in which consumptives may receive treatment, with short introductory articles by Dr. E. L. Trudeau, of the Adirondack Cottage Sanatorium, on "Essential Features in Sanatoriums for Incipient Cases," and by Dr. Lawrence F. Flick, of the Henry Phipps Institute, in Philadelphia, on "Essential Features in Hospitals for Advanced Cases." These introductory articles supply a standard by which the average reader can judge of the value of existing institutions in many points and they furnish suggestions to persons who are planning new ones. The descriptive list of existing institutions will be a welcome guide to the physicians and friends of consumptives, whether poor or well-to-do. The exact name and location of each hospital and sanatorium is given, and charges and other terms of admission, the number of patients received, directions in regard to applying for admission, a more or less extended description of the situation, and in many instances views of the buildings or grounds. They are arranged according to the states in which they are located, and are in this way very easy to refer to. An index further facilitates reference by classifying them according to the prices charged and according to the stage of the disease for which they are intended. The section on dispensaries is particularly interesting to charitable workers and physicians who have a large practice among the poor, for it gives the location, office hours, and other details in regard to the thirty-two special dispensaries for the free treatment of tuberculosis. The value of such dispensaries and the important features in their conduct are discussed in an article by Dr. Edward O. Otis, Superintendent of the Boston Dispensary. The rest of the book is devoted to an account of the attempts which are now being made to provide special care for consumptives in hospitals for the insane and penal institutions, with articles by Dr. J. B. Ransom, of Clinton Prison, New York, and Dr. A. E. Macdonald, formerly Medical Superintendent of the Manhattan State Hospital East; a description of a municipal system for the control of tuberculosis, by Dr. Hermann M. Biggs, Medical Officer of Health of New York City, together with a summary of the measures which are now taken in the principal cities of the country; and, finally, statements of the methods of work and plans of the thirty-eight societies for the prevention of tuberculosis, immediately preceded by an article on the need for such societies, and their function, by Edward T. Devine, General Secretary of the New York Charity Organization Society. The Directory will be of value to every

physician and social worker and to every one who comes in contact in any way with persons suffering from tuberculosis. Orders may be sent, with one dollar, to the Charity Organization Society, 105 East Twenty-second Street, New York City.

PHILADELPHIA.

New Hospital Chartered.—A charter has been granted to the West Philadelphia General Homeopathic Hospital and Dispensary, at Fifty-fourth and Girard avenues. The building now has twenty rooms, but will be enlarged.

Medical Jurisprudence Society.—At the stated meeting of this Society, held Monday, December 19, a paper was read by Dr. Charles K. Mills. The subject was, "The Forms of Insanity Due to Alcohol and other Intoxicants, with Discussion of Some of their Medicolegal Relations."

College of Physicians.—A lengthy discussion at a recent meeting failed to result in deciding upon a site for the new building. A resolution authorizing the sale of the site previously purchased at Twenty-second and Ludlow streets was carried. The present site, to be increased by adjoining lots, is now meeting with most favor.

Endowment of University Gymnasium.—Great enthusiam was aroused at the exercises marking the completion of the new gymnasium of the University of Pennsylvania, by the announcement by Dr. White that a gift of $50,000 had been made. This amount was left by the late William Weightman, as an endowment in trust for the general advancement of physical education and athletics at the University. In honor of the donor the building will be known as Weightman Hall.

City Takes up Tuberculosis Problem.—Through the efforts of Dr. Lawrence F. Flick, the city has taken a step toward caring for its tuberculous population that is distinctly an advance. Director of Charities Martin has arranged for a special department for the care of the tuberculous at the Philadelphia Hospital and placed it in the hands of a staff of regular physicians. These are Drs. H. M. Landis, Joseph Walsh, Howard Anders, and W. B. Stanton. All are connected with the Phipps Institute and were chosen because of their experience with the disease. Each will have an assistant in the Philadelphia hospital work. Dr. Flick states that Philadelphia is now one of the best organized cities in the United States for the fight against tuberculosis.

The Canonsburg Medical Club. — Canonsburg, Washington county, enjoys the distinction of having one of the most unique Medical Clubs in existence. It meets every Saturday night, any time from 9:30 to midnight, alternately at some doctor's office. There is no constitution, no by-laws, no officers, no requirements connected with being a member, except that the member at whose office the club meets shall furnish the cigars. It has been in existence a year and is a pronounced success. It brings the doctors together for a talk, not necessarily medical, and the little petty things of the week that often rankle and sting, because misunderstood, are explained and not allowed to breed coldness. Doctors have enough annoyances without having any among themselves, and it is just wonderful how they are dissipated by a social cigar. If there were papers to read or duties to perform, the attendance might soon fall off.—*Penn. Medical Journal.*

Ideal House Described.—Dr. Robert E. Thompson, of the Central High School, in a recent lecture on "The History of the House," indicated some of the changes that will come in the house as based on a study of the above subject. The future house will contain no stoves or stairways. Housecleaning will be done by power, the dust being removed by a pneumatic exhaust system as is now in use in large hotels of modern construction. Streets will also be cleaned in like manner, the dust being removed to the country; in this way it may come to pass that country people will come to cities to get really pure air. The houses will contain elevators, heat will be supplied from a central plant and meals will be obtained from cooperative centers as is now done in certain parts of Norway. Moreover, the cooking will all be done by men who alone practice scientific cooking. Dr. Thompson incidentally said that women have no natural gift for cooking, their aim being to supply what people want instead of what is good for them.

Goiter in Pennsylvania.—In regard to the recent investigation of goiter in Northern Pennsylvania, especially Pike and Indiana counties, Dr. A. S. Ashmead writes an interesting letter to the *Public Ledger*. He has observed several cases in Pike county. In Indiana county, dwarfs and cretins are also found in the goiterous families. Dr. Ashmead says the air at the elevation of these counties is antituberculous, but there is a great strain on the circulatory and respiratory systems. The diet is mainly one of starches, and nearly every person has starch dyspepsia and a lazy temperament. Cardiac palpitation is brought on by slight exertion. The most important factor in the condition of the people, however, is that they have intermarried for many years. The thyroid shows the effect of overstrain in keeping such people alive and developing. Later the effect of this and intermarrying is seen in the appearance of dwarfs and cretins. These signs of degeneracy point to the fact that the mountaineer families in these localities are dying out; infusion of new blood is indicated.

CHICAGO.

Jewish Tuberculosis Hospital.—The building of a hospital for Jewish victims of tuberculosis has been urged by Mrs. M. J. Sturm.

To Aid Hospital Fund.—Nearly two thousand tickets have been exchanged for reserved seats for the Burton Holmes' Travelogue, "Round About London," which was given in behalf of the new Children's Memorial Hospital. Thirty boxes were sold.

Fight for Pure Drugs.—Cooperation in the prosecution of druggists who, in the future, dispense chemicals of an inferior quality was pledged by members of the Retail Druggists' Association at a meeting recently held. Resolutions were passed expressing regret that certain pharmacists have been inexcusably careless in selling spurious drugs.

Labor Unions to Join Fight Against the Spread of Consumption.—Labor unions have been enlisted to fight the spread of tuberculosis. The office janitors, cigar makers and garment workers recently offered their cooperation in efforts which are to be made to minimize dust in downtown buildings, and unhealthy conditions in shops and factories.

Preservatives in Food Products.—Dr. Edward Gudeman, at a recent meeting of the Chicago Section of the American Chemical Society, pointed out in a paper inconsistency on the part of the government in allowing the use of preservatives in imported foods, and agitating against them in home products. A label to mark artificially colored food was advised.

Mortality of the Week.—According to the weekly bulletin of the Department of Health, during the week ended December 10, there were 512 deaths reported, 35 of which were holdovers from November, making

the net deaths 477, and the annual death rate 12.89 per 1,000. Pneumonia heads the list with 85; consumption follows with 65; then come heart diseases and violence, 50 each, and Bright's disease, 41.

Annual Report of Chicago Lying-in Hospital.—The ninth annual report of this institution has just been issued. Besides $4.096 in cash donated by friends toward current expenses, the Associated Jewish Charities continued its subscription of $3,000 toward the expenses of the Maxwell Street Dispensary, and large additional sums were expended on the new building, which, with the land, represents an unencumbered outlay of $20,724.68.

Physicians for Work at Cook County Hospital.—President Brundage announces the nominating commission to select the attending staff of Cook County Hospital as follows: Drs. Chas. S. Bacon, Frank Billings, Daniel R. Brower, H. O. Brown, Sanger Brown, Thos. J. Conley, A. C. Cowperthwaite, Nathan S. Davis, Joseph B. DeLee, Fernand Henrotin, F. C. Hotz, Stewart Johnston, John B. Murphy, Hugh T. Patrick, Chas. E. Paddock, Wm. E. Quine, E. M. Reading, Nicholas Senn, Geo. F. Shears, H. M. Starkey, D. A. K. Steele, Jas. H. Stowell, Henry S. Tucker, Chas. S. Williamson and Casey A. Wood. The commission will proceed to select the membership of the staff at the County Hospital, and will present to the President of the Board their choice of candidates.

CANADA.

Annual Report, Toronto Home for Incurables.—The thirtieth annual report of the Toronto Home for Incurables states that there are at present in that institution 111 patients, 38 having been admitted during the past official year. Thirty-six deaths have occurred and twelve left the Home very much improved in health. The Training School for Nurses, established in January, 1903, has proved a success. The total expenses for the year amounted to $28,233.05. The inmates are divided into 57 women and 54 men. Of the former, the oldest is ninety years, and the youngest twenty-one. Of the men, the oldest is seventy-nine and the youngest seventeen. Of the total number paralysis claims 39 and rheumatism, 27.

New Brunswick Provincial Hospital for Insane.—A special commission, consisting of Dr. J. V. Anglin, the newly appointed Superintendent of the New Brunswick Hospital for the Insane, Dr. G. A. B. Addy and Dr. A. F. Emery, of St. John, have been examining the patients in this institution, the object being to relieve overcrowding from which the institution has suffered for some years past. There are at present 554 patients in the hospital, and a careful examination of all these is being made, so that the harmless insane may be removed to other institutions and thus provide accommodation for the more acute cases which can thus be better treated. Dr. Anglin will also press for reform in the matter of the admission of patients, and hereafter no patient will be sent into the hospital without the Superintendent first advising that there is proper accommodation for the care of such patient.

Alexandra Hospital, Montreal.—Through the generosity of Mr. James Ross, Montreal, the work of the erection of the Alexandra Hospital, Montreal, will be at once proceeded with. By the terms of agreement over a year ago the Trustees of the Protestant Hospitals of Montreal, were to have in readiness for the reception of cases of infectious and contagious diseases the new hospital to be known as the Alexandra Hospital. A site was secured at a cost of $90,000, but the erection of the building could not be proceeded with owing to the lack of funds. Recently the Hygienic Committee of the City Council of Montreal called a conference of the Trustees of the Protestant Hospitals, the object being to come to an understanding as to the cause of the delay. At this meeting it was decided to call a mass meeting of citizens and to procure contributions, when, if the proper response were forthcoming, work could go on and the new hospital erected for the reception of patients by September of next year. Dr. Roddick presided at this meeting, at which Mr. Ross promised $25,000 and other citizens handsome amounts, bringing the sum up to $62,500 available for the commencement of the work. When completed the hospital will cost in the neighborhood of $200,000.

GENERAL.

New Medical Building at Ann Arbor.—The ceremonies of laying of the corner stone of the new building for the Michigan College of Medicine and Surgery occurred on December 13. The edifice occupies a commanding site at the corner of the University Campus and is a worthy companion of its neighbors.

Plague Stops Army Coats.—The Governor of Viatka reports a serious outbreak of Siberian plague in factories in the districts of Viatka and Slobodski, which are preparing fur coats for the troops in Manchuria. Two hundred and forty-seven cases have already been reported. The plague has been traced to sheep skins, and the delivery of fur garments to the Russian troops has been suspended.

Patriotism in Hungary.—The Tuberculosis Sanatorium, named after the late Queen Elizabeth, proving too small to accommodate the hundreds of applicants, the committee resolved to erect two new sanatoriums in the healthiest regions of Hungary. In order to raise funds for this grand undertaking one million lottery tickets were issued at $1 each. The sympathy of the public for this measure has been so great that all the tickets were disposed of within one month. Premiums even were offered at double the price after the tickets were all sold.

Famine Threatened in Ireland.—With reference to the resolutions adopted at a meeting of the Irish Parliamentary party in Dublin, on December 16, calling upon the government to extend aid and institute works to afford employment for those in the West of Ireland who have been rendered destitute by the failure of the potato crop, the Irish Office here states that while there has been a partial failure of the potato crop in Ireland, government returns show that the distress, if it occurs, will not be acute before the end of January. Meanwhile the government is taking steps to prevent a famine.

Substitute Drug Poisoners.—Testimony by laboratory experts before the United States Commissioner's Court, sitting in Chicago, on December 17, in a hearing on criminal charges brought out the assertion that certain drugs sent about the country by alleged fraudulent mail order men endanger public life and health. Dr. John A. Wesener, of Columbus University, said a package which he had examined, marked as containing trianol, contained acetanilid. The substitution of acetanilid, grain for grain, for trianol, said the witness, "would in many instances produce acetanilid poisoning and death."

Fourth Pan-American Medical Congress.—The details of the program for the entertainment of those attending the Pan-American Medical Congress are as follows:—January 3.—On their arrival at Colon by special train the Medical Committee will receive the American delegates and accompany them across the isthmus. Registration will be followed by a reception

at the Presidential residence, and the opening session will be held in the evening. January 4.—Excursion and lunch, followed in the afternoon by section meetings with a banquet in the evening. January 5.—Excursion to Tabago Island and Panama Bay; in the afternoon addresses on hygiene, medical and surgical, and in the evening a ball at the International Club in honor of the delegates. January 6.—Excursion on the canal zone, visiting the great Culebra cut and important sections; in the afternoon a section meeting and the closing session.

New President of the Carnegie Institute.—Dr. R. S. Woodward, Dean of the School of Pure Science of Columbia University, New York City, was elected President of the Carnegie Institute, at a meeting of the Board of Trustees, held on December 13, in Washington. He will succeed Dr. D. C. Gilman, the ex-President of Johns Hopkins University, who has resigned. Dr. Woodward is well known as an educator and scientist, and when formerly in that city was connected successively with the Coast and Geodetic Survey and the Geological Survey. Dr. John S. Billings, of New York, and Dr. Charles D. Walcott, the Director of the Geological Survey, were re-elected members of the Executive Committee of the Board of Trustees. Dr. Woodward will not assume his new office until the close of the present university year, and perhaps not until later. Dr. Gilman, in his letter of resignation, gave as his reason for his action the fact that he had passed the age of seventy years and was looking forward to release from serious official responsibilities. He expressed his continued interest in the development of the institution, which, he wrote, "bids fair to be a most potent factor in the advancement of knowledge and in the encouragement of scientific men."

Dr. Howard's Joke on the President.—A recent call made by Dr. William Lee Howard, of Baltimore, at the White House, reminds him to relate this story: "A few years after Mr. Roosevelt left Harvard," said Dr. Howard, "I was living with his Harvard chum in bachelor's quarters on Washington Square, New York. We were medical students at Columbia University. My friend studied too hard and became very ill. There were some doubts about the diagnosis, so we were quarantined. The late Dr. Cyrus Edson and myself were left as nurses for the sick man. C.'s illness continued and was a puzzle to the many eminent physicians who called daily and who constantly congratulated Edson and myself on our faithfulness; but all seemed to forget that we were tired and hungry young men, and the little food we obtained at the restaurants around Washington Square was not to our satisfaction. Remember, C. had to be artificially fed on liquids. One day there was a gentle rap on the door, and upon opening it I was asked in a pleasant voice if C. W. lived there. Then he gently inquired after him, telling me to tell C. that he, Teddy Roosevelt, had called. As he turned to go he stopped and asked if there was anything he could do for C. How was he off for delicacies, wines, etc. Well, I jumped at the chance, and just what I told him I don't remember, but he certainly did not know much about illness, as on the following day there was delivered at our door a large hamper from Theodore Roosevelt, with a note expressing the hope that the patient would enjoy the good things. And those things were good—chickens, pates, guava jelly, hothouse fruit, champagne and Burgundy. Well, Edson and I did not go out for the frankfurters that day or the next. Three days later Mr. Roosevelt again called, and I am ashamed to tell what a con game I gave him about C. getting better; how the delicacies were devoured with eagerness—they were—and with such food C. would soon get well. Remember, the ill man was unconscious of all his surroundings and was being nourished by artificial means. Mr. Roosevelt went away, saying he would tell his sister to send down a hamper; also, some of his Harvard friends would be informed of what was needed. Well, Dr. Edson and I got so fat that by the time C. was able to be moved to Boston we had to get new clothes."

International Medical Congress.—Dr. J. H. Musser, President of the American Medical Association, at the request of the Secretary of the International Medical Congress, which meets in Lisbon in 1906, and on approval of the House of Delegates, has appointed the following members of the American Committee of Arrangements: Drs. Frank Billings, Chicago; Hermann M. Biggs, New York; Herbert L. Burell, Massachusetts; William T. Councilman, Boston; Wm. H. Carmalt, Connecticut; Richard C. Cabot, Massachusetts; N. S. Davis, Jr., Illinois; Chas. H. Frazier, Philadelphia; R. H. Fitz, Massachusetts; W. E. Fischel, Missouri; Chas. Lyman Greene, Minnesota; Ramon Guiteras, New York; H. A. Hare, Pennsylvania; L. Hektoen, Chicago; Edward Jackson, Denver; E. J. Janeway, New York; A. Jacobi, New York; George Ben Johnston, Richmond, Va.; W. W. Keen, Philadelphia; Howard A. Kelly, Baltimore; Chas. Kollock, South Carolina; L. S. McMurtry, Louisville, Ky.; James H. McBride, California; A. T. McCormack, Bowling Green, Ky.; K. A. Mackenzie, Portland, Ore.; John Herr Musser, Philadelphia; J. B. Murphy, Chicago; R. Matas, New Orleans; William Osler, Baltimore; Chas. Powers, Colorado; J. B. Roberts, Pennsylvania; W. L. Rodman, Pennsylvania; M. H. Richardson, Boston; Chas. A. L. Reed, Ohio; H. M. Sherman, San Francisco; Frederick C. Shattuck, Boston; Geo. H. Simmons, Chicago; Chas. G. Stockton, New York; Geo. Sternberg, Washington, D. C.; Victor C. Vaughan, Ann Arbor; John A. Witherspoon, Tennessee; J. Collins Warren, Massachusetts; J. C. Webster, Chicago; Wm. H. Welch, Baltimore; John A. Wyeth, New York; the Surgeon-Generals of the Army, Navy and United States Public Health and Marine-Hospital Service; the presidents of the American Ophthalmological, Otological, Gynecological, Physiological and Pediatric societies; the presidents of the American Dermatalogical, Laryngological, Surgical, Climatological, Neurological, Medico-Psychological and Orthopedic associations; the presidents of the Association of American Anatomists, Association of American Physicians, American Association of Genito-Urinary Surgeons, American Association of Pathologists and Bacteriologists, New York Academy of Medicine, College of Physicians, Philadelphia, Cook County Medical Society, Chicago, and the Society of Medical Improvement, Boston.

OBITUARY.

Dr. CLARENCE WILLARD BUTLER, one of the most prominent physicians of Montclair, N. J., died at his home in that place, December 20, from cancer. He was born in Bellevue, Ohio, in 1848, was educated in Oberlin College and the Homeopathic College in New York, and had been in active practice in Montclair since 1872.

Dr. CHARLES K. LAW, thirty-six years old, died at his home, 82 Glenwood Avenue, Jersey City, N. J., December 13, from peritonitis. He was a graduate of the University of New York and received his medical degree in 1893. He was a member of the University Club, the Jersey City Practitioners' Club, and of the Hudson County Medical Society.

Dr. CLARENCE S. ELEBASH died on December 20, after a three months' illness which originated in an attack

of typhoid fever. The fatal ending was feared, and his friends declared he was a martyr to duty. Dr. Elebash's city home was at No. 118 East Nineteenth Street, and he was a well known specialist in diseases of the eye. For years he was the head of the medical department of the Brooklyn Heights Railroad Company. He was forty-five years of age, a native of New York, and had practised in this city since his graduation from the New York University Medical College in 1891.

Dr. Samuel Hemingway, well known in New York a few years ago in medical circles, died December 18, from heart disease. He was fifty years old and a bachelor, and spent most of his time at his country place, in Oceanic, N. J. He gave up active medical work when only forty years old. When ambulance surgeons were new to New York, thirty years ago, Dr. Hemingway, who was then taking his hospital course after graduation in medicine, was one of the first. He was attached to the old Park Hospital, and made hundreds of runs on accident cases when hardly one out of a hundred persons knew that such a system was in operation and when the ambulance surgeon often had to battle for his own safety against the prejudices of ignorance in order to give needed surgical attention.

Dr. William M. L. Fiske, of Brooklyn, died December 21, at his home, No. 1140 Dean Street, that borough. His death was caused by an affection of the heart, from which he had suffered for four years. Dr. Fiske was born in New York in 1841. He first entered Bellevue Hospital Medical School, but left in 1862 to enlist in Company A of the Forty-seventh Regiment. He returned to the school later, and was gradnated in 1863, afterward graduating from the New York Homeopathic College in 1864. He was then appointed assistant surgeon in the United States Army, and served in that capacity till the end of the Civil War. Dr. Fiske was for many years president of the staff of the Brooklyn Homeopathic Hospital, and was one of the founders of the Eastern District Hospital. He was one of the organizers of the Training School for Nurses of the Brooklyn Maternity Hospital, and was president of the New York State Homeopathic Society. At the time of his death he was one of the Board of Examiners of the Board of Regents.

Dr. D. M. Echemendia, who died in Havana, Cuba, December 20, from a malignant fever, was formerly a noted yellow fever expert, and during the American occupation of Cuba did good work in driving the yellow fever from Havana. He was a surgeon of the United States Marine Hospital Service. During the Cuban revolution, in 1896, he was quarantine officer for the Florida State Board of Health, in charge of the Mullett Key station in Tampa Bay. On one occasion a Spanish cruiser passed the station en route to Tampa from Havana and paid no attention to the signal to stop and undergo inspection. Dr. Echemendia, who was a native of Cuba, became wrathful when he saw the ship flying the flag of the red and gold ignoring the orders of the State of Florida. He boarded the quarantine launch and overtook the cruiser before she reached Port Tampa. There was a lively interchange of compliments in the Spanish language, and the angry doctor ordered the vessel to return forthwith to Quarantine. The Spanish captain was indignant and protested that a State quarantine could not apply to a Spanish war ship. Dr. Echemendia was firm, and was backed by the State Health Office. The vessel later put to sea without touching at any Florida port. The Cubans in Florida have always declared that Dr. Echemendia was the only Cuban or American who ever captured a Spanish war ship single handed, and he was held in the highest esteem by them. Dr. Echemendia did good work in Florida during the yellow fever epidemics in 1887 and 1888.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, December 3.

THE GENERAL MEDICAL COUNCIL—THE SCOTTISH UNIVERSITIES—BRITISH NEGLECT OF SCIENCE—THE HEALTH OF THE NAVY—MISCELLANEOUS.

Dr. Donald McAlister, of Cambridge, has been elected President of the General Medical Council in succession to Sir William Turner who has, like Cincinnatus, returned to his cabbages. Dr. McAlister, who must not be confounded with his more famous cousin, Dr. Alexander Macalister (the difference in regard to the "Mac" has been adopted by mutual consent for the purpose of differentiation) who is Professor of Anatomy in the University of Cambridge and a learned Egyptologist besides. Dr. Donald McAlister distinguished himself as a student by coming out at the top of the Mathematical Tripos. There is nothing that Cambridge venerates so much as a Senior Wrangler, the name given to the first mathematician of the year. There is a story that a man who had achieved that greatest of academic honors celebrated his triumph by going to the opera. He entered a box just as some august Royal personage entered one on the other side of the house. The audience cheered as is the wont of Britishers when royalty condescends to honor an entertainment with its presence. The Cambridge man, with all his blushing honors fresh upon him, took the applause as intended for himself and bowed most graciously, whispering at the same time to his friend "I did not think they could have known of it already!" Cambridge men take this story seriously and check the laughter of the profane by saying that it was a very natural mistake as it is quite right that a Senior Wrangler should receive royal honors. Dr. Donald McAlister has lived at Cambridge all his professional life. He has not made any particular mark as a physician, thus verifying, to some extent, the common saying that Senior Wranglers are never heard of in after life. He was, it is understood, bitterly disappointed that he was not appointed Regius Professor of Medicine instead of Dr. Clifford Allbutt. He has, however, a considerable academic position. He is Linacre Reader of Physic in the University and Senior Tutor of St. John's College. He has the reputation of a first-rate man of business. He has represented his University on the General Medical Council for a number of years and his influence has always made for moderation and statesmanlike breadth of view in the deliberations of that assembly. His sober good sense has been as a brake to the reckless driving of Sir Victor Horsley. The latter is a type of the *idéologues* so despised by Napoleon. Such power as he has is destructive; McAlister, on the other hand, is nothing if not practical and constructive. It is owing mainly to him that Horsley, who entered the Council as a kind of elemental force, amid the shouts of the professional Demos, is now, to use Disraeli's phrase, an almost extinct volcano. It is rumored that at the end of his term Horsley will not offer himself for re-election. This, if true, may be taken as a confession of failure.

One of the matters debated by the General Medical Council was a report by the visitors and inspectors of the Council, on the final examinations of the University

of Edinburgh. In that report the inspectors "felt obliged to criticize unfavorably some of the arrangements and methods of the examination in clinical surgery." Attention was called to the ignorance of surgical pathology shown by the candidates, to their apparent want of training in clinical observation, and to their lack of practical skill in operative surgery. Summing up their conclusions the inspectors remark that "it is to be assumed that the University authorities desire the degree to be a high one; at present this can hardly be said to be the case." The report led to a heated discussion in which Sir William Turner descended from the Olympus of the presidential chair and entered the arena as a combatant in defence of the University of which he is the representative. Sir John Batty Tuke, another Edinburgh man, also flourished his claymore at the audacious "Southrons" who dared to breathe a word against the fair fame of Scottish universities. The inspectors, however, stuck to their guns. It was an amusing though not altogether an edifying scene. The Scottish thistle is proverbially not to be handled with impunity and the Caledonian stern and wild is especially touchy about his universities. He has good reason to be proud of them but he insists on their being regarded as sacred. The University of Edinburgh in particular, looks upon itself as sacrosanct—indeed as an ark of the covenant not to be touched by profane hands. A year or two ago the *British Medical Journal* published a letter in which it was hinted that the teaching in that famous seat of learning was not all that it might be. The same thing was being freely said in much stronger terms in the Edinburgh papers, but it was felt to be an intolerable insult that any criticism of a Scottish institution should appear in a journal published in England. The heather was on fire, and Edinburgh men clamored for some one's head. Many years before the same journal had allowed itself to indulge in some extremely gentle criticism of the University of Edinburgh, and the offence has never been forgiven. At any rate this is the explanation given of a certain aloofness in regard to the British Medical Association, which has become traditional in the city that delights to call itself the "modern Athens." As for the report of the inspectors of the General Medical Council, rightly interpreted, it is a thing of little moment. As has been said in former letters, a system of reprisals has been in vogue for some time past, which goes far to deprive these reports of any real significance. English inspectors have adversely criticised the examinations of Irish Universities and Colleges. Irish inspectors have retaliated by condemning English universities, including even Oxford and London. Scotchmen have given thanks that their schools were not even as those of the English and Irish. This pharisaic attitude has had its natural result. The true value of the criticisms of the surgical examinations of the University of Edinburgh may be gathered from the fact that the inspector, Mr. Thomas Bryant, formerly Surgeon to Guy's Hospital, has not, it is said, been inside a surgical ward for fifteen years. Only a few years ago, speaking of the same University, he reported that the entire examination in clinical surgery was a most complete, searching and practical one." A frank account of the more recent experience which has led him to change his mind would be interesting.

The annual dinner of the students, past and present, of the Medical School of the University of Birmingham, took place on November 30. Sir Frederick Treves, in proposing the toast of "The Medical School," said it used to be considered that a university could not be good unless it was old and located in some quiet place far from the haunts of men. But times have changed. A university, to be a success in science, at any rate, must be young and must be situated in a great city like Birmingham. Whatever the theoretical value of Latin and Greek, the thing of absolute importance in these days was applied science. It was to be regretted that very little heed was given to science in this country. All the great advances in medicine and surgery had been made by men who had worked for positively nothing and had made a present of their discoveries to the world. There was a sort of Free Trade practice which left the medical discoverer at the mercy of everybody. It would be a very good thing if some kind of fiscal policy could be introduced by which those who taught science in this country could be placed in a similar position to that occupied by those in Germany or America. Mr. Chamberlain (Chancellor of the University), who proposed the toast of "The Past and Present Students of the Medical School," said he had never seen so many medical students together before. He had been examining them with great interest. He thought there was a lingering suspicion in the minds of the public that as a class they might still be considered as fairly represented by those world-known portraits of Mr. Bob Sawyer and Mr. Benjamin Allen. But if that was the public view the public were very much mistaken. He went on to say that three classes of people were essential to the success of a modern University. There were, first, the students, who would always be with us. In the second place, there were the teachers. It was upon their energy, their capacity, their knowledge, and their distinction that reputation of the University would always depend. Lastly, there was a third class, and the third class was at least as important as the other two. That was the class that was known as the "pious benefactor" that was a species which was undoubtedly much too scarce in these days. In the United States, through munificent donations to be counted by millions, they had covered the land with a network of Universities which had brought higher education within the reach of almost every citizen. He hoped the time was coming when those in this country who had more than they wanted would be content to dispose of more of their wealth in the shape of contributions to such institutions. He had heard—he did not know whether it was a superstition—that sometimes gentlemen in the medical profession were consulted by their patients and friends as to the disposal of such surplus. If it were the fate of any past or present student to enjoy such confidence he hoped he would gently insinuate that, if his patient or friend desired undying renown and the gratitude for all time of generations to come, he could not do better than to enable them to supply what was at present their greatest deficiency and to establish in Birmingham in connection with their University a great medical school of research.

The Director-General of the Medical Department of the Navy, in his annual report to the Admiralty, issued on November 28, states that the aggregate number of cases of disease and injury recorded last year furnished a ratio of 831.57 per 1,000, which showed a decrease of 29.56 per 1,000 compared with the ratio of 1902, and a decrease of 48.06 contrasted with the average of the last six years. The invaliding ratio of the total force—viz., 24.03 per 1,000—showed a decrease of 5.93, and the death rate, which was 4.19, showed a decrease of 1.73 per 1,000, and was the lowest recorded since 1856. Only two wounds in action are recorded, with one death, which occurred on the East Indies Station, when the Mohawk landed a force to punish the chief of the

village at Durbo, Italian Somaliland. The total force serving afloat last year was 103,100, the total number of men sick daily was 3,633.54, and the total days' sickness on board ship and in hospital was 1,326,244, representing an average loss of service from disease and injury of 12.86 days for each person. Enteric fever shows a slight increase of .15 per 1,000 of cases, but the deaths during the year were fewer by seven than in the preceding year. Ten cases of plague are recorded as having occurred on the China Station, none of which proved fatal. There was only one case of cholera. There were 17,295 cases of wounds and injuries and 129 deaths, as compared with 16,389 and 225 deaths in the previous year. Sixteen men committed suicide.

The King has subscribed $250 and the Queen $500 to the fund being raised by a British Committee toward a memorial of the late Professor Finsen, of Copenhagen.

Dr. A. W. Wigmore, who went through the Bankruptcy Court the other day, stated that he was an X-ray expert, and attributed his failure to the "slump" which has taken place in that line of practice owing to the scare (referred to in a recent letter) produced by the reports of injurious effects caused by the Roentgen rays that have appeared in the newspapers.

Dr. Achille Vintras, founder of the French Hospital in London, who died two or three weeks ago, was a highly respected physician, in speaking of whom the epithet "blameless" applied by Homer to prophets, naturally rises to the lips. He was the son of a somewhat remarkable man who, if not blameless, claimed to be a prophet. Vintras *père* was the son of a washerwoman of Bayeux in Normandy. After a youth of poverty and adventure he heard voices which told him he was the prophet Elias. He founded a new religion, but less fortunate than Dowie, his tub-thumpings alarmed the French Government, and he was put in prison where he remained till 1848; the personal intervention of Crémieux was required to set him free. Disgusted with his inappreciative countrymen he founded a church in England, but went back to France where he died in 1875.

SOCIETY PROCEEDINGS.

CHICAGO MEDICAL SOCIETY.

Stated Meeting, held November 16, 1904.

The President, John B. Murphy, M.D., in the Chair.

Advantage of Muscle-Splitting and Muscle-Retraction Incisions in the Prevention of Ventral Hernia.—Dr. Martin B. Tinker, of Ithaca, N. Y., read a paper (by invitation) on this subject, saying that the very considerable number of ventral hernias, following clean, uncomplicated abdominal operations, which probably come to the notice of every surgeon in active practice, should furnish ground for reflection as to the necessity for their occurrence. The number of these cases, which have come to him during the past year, has formed almost four per cent. of his total number of cases, and his previous experience has led him to believe that the patients seldom return for the cure of their hernia to the surgeon who performed the original operation causing the hernia. The state of many of these patients, with their constant discomfort from wearing some form of abdominal support, with pain from adhesions about the hernial opening, and with the not infrequent occurrence of symptoms of strangulation, often makes their condition but little preferable to that for which the original operation was undertaken. To avoid the disadvantages of the rectus incision, especially the paralyzing of the median side of the muscle, Lennander in 1898 introduced the rectus retraction incision. In 1900 Pfannenstiel introduced his supra-symphysarian cross incision, which gives free access to the pelvis and organs near the median line of the body. In opening the abdomen for pelvic operations of any kind, the speaker usually employs the Pfannenstiel incision, although if freer exposure is desirable, the Lennander incision is preferable. The Pfannenstiel incision has the possible additional advantage of placing the scar below the pubic hair line, where it is not noticeable. It will be found very satisfactory for myomectomy; operations on the tubes or ovaries; advancement of the round ligaments for backward displacement, or other operations near the median line of the lower part of the abdomen. For abdominal hysterectomy the Lennander incision gives better exposure. For exploration of the right iliac fossa, where some involvement of the pelvic organs is suspected, he also prefers the Lennander incision. Where simple appendectomy is to be performed, he thinks nearly all surgeons agree that the McBurney muscle-splitting incision is preferable, but when appendectomy is combined with work in the pelvis, the Lennander incision is preferable. Operations in the upper abdomen are far less likely to be followed by postoperative hernia, but, as Richardson recently pointed out, the muscle-splitting incisions in the treatment of diseases of the gall passages afford far greater security against the occurrence of ventral hernia. There are undoubtedly other features of great importance in the prevention of ventral hernia. Healing by first intention is of first importance; the specially careful arrest of hemorrhage to prevent accumulation of blood in the wound, not only lessens the danger of infection, but favors firm healing. The prevention of strain on the wound after operation by distention is also very important. Undoubtedly the accumulation of intestinal gases can be greatly lessened, if not entirely prevented in most cases, by thoroughly emptying the intestinal tract before operation, and by careful attention to the bowels after operation. The avoidance of any strain on the wound by preventing postoperative nausea and vomiting was important, also the prevention of strain on the wound by the patient exerting himself too early. The possibility of getting the patient out of bed at an early date following operation with a feeling of absolute security from hernia, and without the necessity for wearing a binder, is a great satisfaction and sufficient reward for the extra pains and few additional minutes of time required to open and close the abdomen by any one of these methods.

The Kocher Method.—Dr. L. L. McArthur thinks that to Kocher, above all modern teachers, is due the credit for presenting in a systematic manner the best lines of incision to follow. These are prettily illustrated in his work on operative surgery, particularly in the early editions thereof, in which he describes the lines of cleavage. These lines of cleavage bear a relationship always to three factors, to those lines in which the least tension would occur, to those in which the least destruction of muscular fiber or actual paralleling of muscular fiber will occur, and finally an important factor of those incisions in which the innervation of these muscles involved shall not be disturbed. He is very much surprised that in any man's statistics, on careful investigation of the through-and-through suture in the linea alba in uncomplicated cases, where drainage has not been necessary, that as large a per cent. as one in five, or twenty per cent. of the hernias, should occur. It may be explicable on the basis that patients do not return to the surgeon who has been the cause of the

hernia. He thinks a very decided improvement on an incision known as Kämmerer's is one at the edge of the rectus, where occasionally one finds it necessary to go into the pelvis for complications in operations which are associated with appendical work, as, for instance, ovarian tumor, suppurative tubes, twisted ovarian pedicle, etc.

Dr. Bevan's Procedure.—Dr. Arthur Dean Bevan agreed with the essayist as to the importance of planning incisions so as to reduce the dangers of resulting postoperative hernia to a minimum; but there are a number of factors which must be considered in planning an abdominal incision. First, and most important, is to plan the incision so as to give free and sufficient exposure to do the operation. Second, plan the incision so as to give the least possible danger of a resulting hernia. If one is opening the abdomen to remove a large fibroid of the uterus, he could not employ the Pfannenstiel incision. If he is opening the abdomen to remove a large spleen, he cannot employ the muscle-splitting incision. If he is opening the abdomen posteriorly, to remove a large tumor of the kidney, the muscle-splitting incision is out of question. Furthermore, if he is opening the abdomen to operate upon the common duct, the muscle-splitting incision is out of the question, and should not be considered. The muscle-splitting incision has little value in operations on the kidney. An incision can be planned for the exposure of the kidney which is parallel with the nerves of the region of the abdominal wall, and yet not be a muscle-splitting incision. There is very little danger of hernia in a properly planned kidney incision, which divides the external oblique, the internal oblique, and transversalis fascia, but which does not interfere with the nerve supply or arterial supply of the abdominal wall posteriorly. Incisions in the posterior portion of the abdominal wall, and the upper portion of the abdominal wall, are not nearly as apt to be followed by hernia as incisions in the lower portion of the abdominal wall. An oblique incision parallel with the costal arch in the upper abdomen, which divides nerves, muscle fibers, or fibrous tissue transversely, is not nearly so apt to be followed by hernia as a muscle-splitting incision in the lower portion of the abdominal wall. It is rare to have a hernia following an incision parallel with the costal arch for gall-bladder work. He is very fond of muscle-splitting incisions, and employs them wherever he can do so. He does not think, however, that the point should be emphasized to employ these incisions where other factors are more weighty. An incision in the median line, in the linea alba, is a very safe and useful one, and he employs it quite extensively. He thinks that the statistics of seven per cent., or twenty per cent., are altogether too great. Why should one have a hernia in a midline incision of from three to six inches in length which heals by primary intention, and where the patient has been allowed to remain in the recumbent position until wound healing is complete? He is rather impressed with the fact that the German surgeons have more hernias following their operations than American surgeons. He called attention to the fact that the statistics of operations, for instance, from the Heidelberg Clinic, by Czerny, which have been extensively reported in the *Beiträge zur klinischen Chirurgie* for the last four or five years, show the proportion of hernias to be from 20 to 25 per cent. in suppurative cases. This percentage would be considered large in America. The length of the incision is of comparatively small importance as compared with primary wound healing. The recumbent position should be maintained until wound healing is complete. He has no sympathy whatever for the proposition of having a patient get up on the second day after a muscle-splitting incision or not.

Dr. E. Wyllys Andrews said he had supposed until recently that the Pfannenstiel incision was a skin incision only. He has only used it a few times, and believes it is used almost solely in the case of young women, and generally unmarried women so as to be covered by the pubic hair afterward. Personally, he likes to go one-half or three-quarters of an inch out from the median line and secure muscular wall for the incision. He attaches a good deal of importance to the imbrication idea even in ordinary celiotomy.

German Statistics.—Dr. A. J. Ochsner agreed with the previous speakers regarding German statistics, and said whoever has witnessed these clinics, from which these statistics were taken, knows that several things were done which must result in bad unions. First, the incision is made very long usually; second, the tissues are handled roughly; third, the stitches are applied with the least possible amount of care and accuracy; fourth, they are tied so tightly that they tend to cause pressure necrosis. All of those factors were bound to cause ventral hernia. He ventured to say that there is not one-fourth of one per cent. of ventral hernia possible, provided the conditions he had mentioned were carried out. He has followed many hundreds of his cases, and in those in which there was no drainage or suppuration there was no ventral hernia. One cannot get a ventral hernia if the different layers are accurately and properly approximated. He places a silkworm-gut suture down through the transversalis fascia as an emergency suture, so that if the patient should sneeze severely at the time when the catgut has become softened, there will be a safety suture on the outside to hold it. He sutures the peritoneum and transversalis fascia together; he passes a second catgut suture through the muscle, and a third catgut suture through the aponeurosis of the external and internal oblique, and after all ties the silkworm-gut suture sufficiently loosely to guard against pressure necrosis. Furthermore, he applies for emergency's sake again broad adhesive strips, so that if the patient should strain, vomit severely, or sneeze, the soft tissues would not be torn. He takes the additional precaution of always emptying the bowels thoroughly before operation, and of keeping them moved always so as not to cause a great amount of intra-abdominal pressure.

The Median Incision.—Dr. E. C. Dudley said the probabilities are that the most practical single incision for exploration is one that is made near the median line. He is inclined mostly to use a median incision and a lateral median incision for pelvic work and for appendicitis work, with a lateral incision for simple appendicitis work, and an incision in the region of the gall-bladder, because the greater part of his surgical work has been done in these three regions. He makes his so-called median incision through the right rectus muscle, parallel with the fibers of the muscle, somewhere near the inner margin of the muscle. This is done in order to avoid ventral hernia or to get a more accurate closure. For many years he has abandoned the through-and-through suture, and has used chromicized catgut, suturing layer by layer, first the peritoneum, the posterior fascia, the anterior fascia over the rectus muscle, and then, if there was a great deal of subcutaneous structure, sutures through that, and then inserts a buried suture for the skin.

Dr. William Cuthbertson stated that Pfannenstiel recognizes the limitations of his own incision, which is applicable to the removal of large tumors or of ap-

pendices complicated by some pelvic difficulty where there may be a short mesoappendix or cecum. He agrees with Dr. Bevan in reference to the after-treatment. One point seems to be lost sight of by some practitioners, namely, the complete wound healing after operation in the abdominal cavity. The experiments he has made on dogs in the past directed his attention particularly to this fact, that after having opened the abdomen of the dog, forty-eight hours later, it was quite easy to open the wound by simply pressing the finger through the line of incision. In from four to five days it was hard to open the skin incision with the finger, and it usually required the handle of a scalpel, a Kocher dissector, or a moderately sharp instrument to reopen the skin incision. After having gotten through the skin, it is an easy matter with the finger to separate the abdominal muscles and reenter the abdominal cavity. In all cases of abdominal operations we should not be in such a great hurry to get patients out of bed unless they are old and feeble, but to give them a longer time to let wound healing be complete. Furthermore, to have thorough hemostasis before closing the abdominal wound, and not leave so much blood clot between the surface of the wound to become organized.

Dr. Carl Beck has had experience with the incisions of Pfannenstiel and Küster. German surgeons publish a larger number of statistics than do Americans, because they keep more exact clinical records. If patients in America have hernia they do not return to the clinics as do the patients in Germany, and consequently hernias do not appear to American surgeons as such afterward, but they go to other surgeons. The percentage of hernia, therefore, following operations in America is much greater than would appear from what has been said. Secondary union is largely due in many instances to poor hemostasis in closing the abdomen. Blood clots are formed, and there are accumulations of blood which, with germs or foreign bodies in catgut or silk, cause an aseptic suppuration, and from this secondary union takes place. He has removed large tumors through a small transverse incision because one can stretch the incision. The muscles are not split, but simply the fascia. There is one disadvantage connected with this method, namely, that large surfaces are opened, and if exact hemostasis is not applied secondary union is invited, which can be avoided in the other incision by putting in a number of sutures of catgut or of silk. Formerly he had a number of suppurations, but latterly he had been able to avoid this by putting in drainage in the septic cases clear down to the surfaces that had been divided. With the addition of tubal drainage, one can employ this incision satisfactorily, and can avoid hernia.

Dr. Albert Goldspohn said, his own impression is that the percentage of hernia is far less than that mentioned, and from his own experience he was inclined to regard it as almost a closed chapter. The cardinal principles of closure of wounds must be carried out, or there will be a hernia. He described a technic similar to that of Dr. Ochsner, with the exception that he does not find it necessary to open the sheaths of both recti, but severs one rectus muscle and opens one sheath only, not splitting the muscle, but separating it from the linea alba, and then uniting it with a few through-and-through sutures to guard against the accumulation of serum or of blood between the layers of the wound.

Dr. Tinker, in closing, said he would not have any of the members believe that he advocates these incisions for all kinds of surgical work. No one recognizes their limitations any more clearly than he does. He also agrees with the gentlemen that certain operations cannot be performed with the use of the incisions which he had advocated. The Pfannenstiel incision has many of the advantages he had spoken of. It is not his custom to allow patients to get up in less time than a week, and usually not until ten days after operation. Healing is not likely to be complete until that time; but he does feel perfect confidence in allowing a patient with one of these incisions to get up at the end of two weeks at the latest, without the use of any binder, and he has yet to see any evil results following it.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting, held November 1, 1904.

The President *pro tem*, Joseph Fraenkel, M.D., in the Chair.

Two Cases of Bilateral Symmetrical Atrophy of the Thenar Eminence.—These were presented by Dr. I. Abrahamson. The first patient was a woman, sixty-two years old, whose family and personal history was negative. Her occupation was that of a housewife, which necessitated putting her hands in water a great deal, and she also assisted her daughter at needlework. Eight years ago she first began to experience numbness and paresthesia in both hands, with beginning atrophy of the thenar muscles, chiefly the flexor brevis pollicis. There were no trophic skin changes and no nerve tenderness. The atrophy was symmetrical in both hands. The second patient was a woman, fifty-two years old, a native of Hungary. Her occupation was that of a housewife. The symptoms were similar to those in the first case, but the paresthesia was most annoying at night. There was marked symmetrical atrophy of both thenar eminences. The speaker said he regarded both of these cases as examples of acroparesthesia with subsequent atrophy.

Dr. Charles L. Dana said the unusual feature of these cases was the symmetrical character of the atrophy affecting both hands. Not long ago, the speaker said, he saw a case of atrophy of the thenar eminence of one hand, with paresthesia and evidence of neuritic disturbance. In this instance, the condition had been produced by the Vardon grip in playing golf. In another case the patient was an elevator boy, and the neurosis had been produced by pulling on the wire rope of the elevator. While these occupation neuroses were not particularly rare, bilateral and symmetrical cases of this kind were extremely so.

DISCUSSION ON THE CLASSIFICATION OF THE MELANCHOLIAS.

Dr. Charles L. Dana opened the discussion. He stated that the term melancholia indicated to the psychiatrist a combination of symptoms varying in groupings, duration and intensity, but beneath all a dominant condition of painful emotional depression. It might occur as a symptom in various organic and degenerative cerebral diseases, but it was recognized in particular as a manifestation of two the period of involution of change of life and later. Second, that occurring in early and early middle life. No one, the speaker thought, disputed the distinctive character of melancholia of the first type as it occurred in middle and late life. The "melancholia of involution" was a chronic and incurable disorder. It was a psychosis accompanied with anxious, worrying apprehension, and was often a natural evolution of the constitutional worrier. It

was characterized by hypochondriacal and obsessive ideas, dysthesia and somatic delusions; by hallucinations, self-accusations, and at times by suicidal ideas and impulses. There was complete self-absorption, narrowing of consciousness, enfeebled attention and power of concentrated or constructive thought. There was no clouding of consciousness nor retardation of thought nor dementia. It was an agitated, worrying hypochondriacal psychosis. The melancholias which were seen especially during early life, and were at least characteristic of that period, had not such a single definite picture. That form which had been described as acute melancholia, however, was in its typical form a sharply defined condition, characterized by profound emotional depression, retardation and difficulty of thought, clouding of consciousness and other phenomena familiar enough to all. This form of melancholia, so Kräpelin and his followers teach, was not really melancholia, but only the melancholic phase of manic-depressive insanity, and it was proposed to substitute this term for all or most of the functional melancholias not belonging to the melancholia of involution. Hence we would have but one real melancholia, the chronic form of later life. Dr. Dana said he had been trying to fit this scheme to his experience, and for that purpose he had looked over the histories of over 400 cases occurring in his private practice. Of these he had closely analyzed 30, which he had seen more recently and in many instances followed for a long time. From this analysis he had reached the conclusion that chronic melancholia, under the classification of Kräpelin, was indeed a special disease, but not in all cases one of the involutional period. In its milder types especially, it seemed to him that pictures of it would be called anxiety psychosis, or depressive neurasthenia, and it was not unreasonable to suppose that in psychopathic individuals, or those with a special hereditary tendency, the nervous system should be subject to early chronic melancholia. He thought it possible that this same worrying psychosis might appear at the period of adolescence, when the disease was less intense, the somatic and sensory disturbances less severe, but the mental state essentially the same. The sharply defined delusional melancholia of early life, with great activity of thought, clearness of memory, intense self-accusation and powerful suicidal impulses belonged more to this type than any other. The association and alternation of mania with early, simple recurrent melancholia was an established fact, and the term manic-depressive insanity fitted this group of cases admirably, but in the speaker's list of 400 cases of melancholia, mostly not asylum types, there was a history of mania in only eight per cent. It seemed rather forcing the issue, therefore, to use the term manic-depressive insanity for these patients, who never had any mania. He was inclined to regard the melancholias of early life as simple melancholias of the involution type—or pre-involutional, if that seemed a better term. He would, at least, consciously associate their disorder to that form seen more typically and severely later in life. He would say that there were a great number of simple, functional, often recurrent melancholias that belonged to the manic-depressive type by reason of the neurasthenic and apathetic condition, the absolute loss of interest in life, and psychomotor sluggishness and enfeeblement, but he saw no reason to use the term manic-depressive insanity here. He would only use the term manic-pressive insanity when there was evidence of it.

Dr. M. Allen Starr said that Dr. Dana's remarks regarding melancholia would appeal to every neurologist and practitioner who did not constantly come in contact with the severer types of insanity. Those who were doing asylum work, however, might meet with considerable difficulty in grouping certain of the cases. Perhaps five per cent. of the cases in the average asylum could not be positively assigned to any definite group. The speaker said he was glad to hear Dr. Dana make a distinct protest against the term manic-depressive insanity. He had never been in sympathy with that term, for the simple reason that it did not coincide with our clinical experience in this country. He had carefully reviewed the records of about 280 cases that he had classified as melancholia, and he saw no reason to protest in any way aginst the classification that was proposed by Krafft-Ebing years ago, namely, simple melancholia, melancholia with delusions, and melancholia with delusions and agitation. Those three types embraced distinct varieties of the disease. The speaker said he also agreed with Dr. Dana that the type that rose to the stage of mania was extremely rare, in his own experience probably not exceeding five per cent. of the total number of cases observed. He thought it would be very unfortunate, therefore, to label these patients with a term like manic-depressive insanity, in spite of the fact that in 95 per cent. of the cases there was no mania whatever. Dr. Starr said that a careful study of his cases of mild melancholia had impressed him with the idea that the condition was a purely toxic neurosis. The symptoms were most severe in the early morning, and passed off largely during the day. Sixty per cent. of his cases never passed beyond the simple melancholia type, which was not the type met with in the insane asylums. The cases he had in mind were entirely conscious of their surroundings and of their own condition; they were in extreme dread of insanity, and they were not suitable subjects for an insane asylum and to incarcerate them in such an institution would be an outrage. About 35 per cent. of his cases correspond to the delusional type, and required watching to prevent suicide. Dr. Starr said he would like to impress upon the Society the existence of a true toxic melancholia. In fully 60 per cent. of his mild cases he believed that he had to deal with a purely toxic neurosis, and if we could eliminate the poison, we could cure the patients. He had noted that any intercurrent disease, such as grippe, pneumonia or malaria, that produced a decided change in the chemistry and nutrition of the body, arrested the symptoms in these mild cases of melancholia, and he had produced the same effect by the use of thyroid extract. Under the administration of this agent the symptoms of melancholia would be immediately relieved and remained absent until the temperature again dropped to normal.

Depression Instead of Melancholia.—Dr. Adolf Meyer said that his experience with the melancholias had naturally been of a different sort from that of Drs. Dana and Starr, having been largely confined to patients who were already committed to the asylum. His observations had led him to conclusions which did not essentially differ from those of Dr. Dana, although for practical reasons he would rather favor a different classification. On the whole, he was desirous of eliminating the term melancholia, which implied a knowledge of something that we did not possess, and which had been employed in different specific ways by different writers. If, instead of melancholia, we applied the term depression to

the whole class, it would designate in an unassuming way exactly what was meant by the common use of the term melancholia; and nobody would doubt that for medical purposes the term would have to be amplified so as to denote the kind of depression. In the large group of depressions we would naturally distinguish our cases according to etiology, the symptom-complex, the course of the disease and the results. A distinction into acute and chronic forms is not consistent with experience. Dr. Hoch finds that all attacks tend to become longer in advanced years. The distinction had best be made according to the intrinsic nature of the depression. From that point of view we might distinguish the pronounced types from the simple insufficiently differentiated depressions. Besides the manic-depressive depressions, the anxiety psychosis, the depressive hallucinations, the depressive episodes of dementia praecox, the symptomatic depressions, non-differentiated depressions will occur; especially the differentiation of the dementia præcox type frequently causes difficulty, where stupor and catalepsy supervenes. The speaker said he was somewhat surprised that no reference had been made to the difficulties in determining the depressions of dementia præcox. He took exception to Dr. Starr's statement that mania was but a rare event and only to be expected in the most agitated cases. He could not recall a single instance where a case of the pure agitated type developed mania, while on the other hand, the type that did not show the agitation, but a great deal of inhibition and subjective inadequacy—was the form that might develop mania. Dr. Meyer said that he would rather hesitate to accept Dr. Starr's idea that the intermission in the symptoms of melancholia produced by febrile disturbances proved the toxic origin of those symptoms, because an intercurrent disease was apt to produce a change in the symptoms of almost any mental disorder. The shortness of the time for discussion did not permit the review of about 300 cases of depressions to be reported on another occasion.

Classification of Insanities.—Dr. Ralph L. Parsons said that some years ago he made out a classification of the insanities that was provisional only, because the facts upon which to construct a scientific classification did not exist then nor did they exist at the present time. Different types of insanity were often very closely identified, and during the same attack the patient might exhibit symptoms of mania-melancholia and dementia. Dr. Parsons then exihibited a table that he had devised, in which the melancholias were divided into many different types descriptive of their cause, such as adolescent, puerperal, etc.

Remarks on Melancholia.—Dr. Joseph Collins said that while some writers on mental diseases claimed that melancholia was a very uncommon disease, and much less frequently met with to-day than mania, others maintained that there was no such disease as melancholia, and that that which we called melancholia was a symptom of a diagnosticable condition, which, being the real disease process, should be entitled to the name. Personally, Dr. Collins said, he was in sympathy with the latter writers, insofar as their position compelled them constantly to seek for the dependency of melancholia, but he was unwilling to accept their statement that there was no such disease as simple melancholia, *i.e.*, melancholia which was not a constituent of other disease, physical or mental. The general practitioner was likewise loath to accept such statements, because they seemed to him to be at variance with his experience. The difficulty in discussing the subject was that the term melancholia was used by writers with great latitude and absence of specificity. Melancholia, or mental depression, coupled with moral insufficiency, sadness and anguish, was of common occurrence. It was encountered in certain toxic states, such as alcoholism, and as the result of insufficient oxidation and deficient elimination. It was found associated with neurasthenia, paresis, general and cerebral arteriosclerosis, dementia præcox and mania, and also occurring without any of these associations. Every neurologist saw a great many cases which he diagnosticated as melancholia without being able to satisfy himself of the dependency of the melancholia, just as the general practitioner or consultant in internal medicine must often still make the diagnosis of indigestion without being able to satisfy himself that it was dependent upon one or more of a number of disorders conditions that were sufficient to cause it. When the neurologist had the opportunity of observing these cases for a protracted time he was unabled to classify them more specifically, and from an etiological standpoint more correctly. There was a tendency at the present time to put all cases of melancholia that could not be referred to organic disease and manic-depressive insanity under the head of "involution melancholia," *i.e.*, melancholia associated with retrograde changes in the tissues, and occurring at a time in life when such changes of the tissues set in physiologically, and therefore directly or indirectly dependent upon them. It was the writer's experience that considerably less than one-half of all the cases diagnosticated as melancholia, using the term in the specific sense mentioned above, could be placed in this category. Dr. Collins then cited, in detail, a number of cases of melancholia which illustrated the great variation in the onset, delineation and course of the disease, and the difficulties that beset the attempt to place them in one or two groups. The neurologist often had much difficulty in deciding whether such a case should be called neurasthenia, hypochondria or melancholy depression. Some of these cases eventually became insane (using the term in its legal sense), but he believed that the vast majority of them did not, nor was their mental capacity so interfered with that they had to abandon their business. Whether or not there was such a disease as acute melancholia was of the greatest importance because it carried with it the matter of prognosis. The outlook of manic-depressive insanity and involution melancholia had been fairly well determined, and the diagnosis of either one carried with it a serious prognosis. Dr. Collins said he agreed entirely with Dr. Dana, excepting to his statement that there were two types of melancholia with three names for them. There were three types of melancholia, namely, the acute, the manic-depressive and involution melancholia. So far as the manic-depressive type was concerned, the speaker said he knew of no disease with more clearly drawn clinical features, none which could be more readily recognized, and none in which the etiology, course and eventuation was more certain. He saw no more reason for eliminating manic-depressive insanity than he did for eliminating appendicitis, streptococcus meningitis or other well recognized conditions. As to the relation of toxic conditions to melancholia, Dr. Collins said he had never seen a case of melancholia that was relieved in any way by medication directed toward the supposed toxic agent, and the very fact that the symptoms became

intermittent or were held in abeyance by the administration of other poisons, or by an intercurrent attack of grippe or pneumonia would seem to militate against the contention that they were of toxic origin. Otherwise it would be a strong argument in favor of the doctrine of *similia similibus curantur*.

Dr. B. Sachs said that in a discussion of the classification of the melancholias, there was danger of going to extremes in both directions, and making the classification either too wide or too narrow. Under the influence of Krafft-Ebing and the older French and German writers the term melancholia was much abused. It should be restricted, he thought, to those cases in which there was a slowing up of all mental processes, associated, perhaps, with some self-accusation. This formed a very definite clinical picture, and he saw no reason why it should be eliminated. On the other hand, there were various forms of depression which could be differentiated from melancholia. In private practice he frequently made the diagnosis of simple depression; this he regarded as a transitory condition, and it had never occurred to him to look upon it as true melancholia, which was a true and very often a serious psychosis. To his mind, pure melancholia had always represented a typical and grave disorder. The question arose whether to discard the older classification entirely in favor of the more recent one of Kräpelin, with its comprehensive term of manic-depressive insanity, which included all types of melancholia, circular insanity, and what not. In picturing manic-depressive insanity, Kräpelin had shown great genius and insight, and Dr. Sachs said he indorsed that writer's wisdom in putting before the medical public the existence of a large group of cases that were characterized by typical symptoms. There could be no doubt about the existence of such a group, but he could not agree with the dictum of Kräpelin that all cases of melancholia were merely one stage of manic-depressive insanity.

Dr. A. R. Diefendorf, of Middletown, Conn., said he was surprised by the difference of opinion regarding the melancholias, as expressed by the neurologists and those who saw these cases in asylums, as it was certain that all the cases that eventually came to the hospitals for the insane had passed through the hands of the practitioner and specialist. As regards simple melancholia, there were several groups of those cases. There was one group in which the characteristic symptoms were mental sluggishness, a feeling of insufficiency or inadequacy, a lack of energy, an increased sense of fatigue, a slowing of the train of thought, difficulty of comprehension, perhaps a few indefinite hallucinations and possibly a few delusions. The emotional attitude of these patients was one of simple despondency. They took an abnormal view of life. There was another type of simple melancholia that occurred early in the course of senility.

Dr. Edward D. Fisher said he would certainly agree with the view that we had to deal with a simple melancholia which was distinct from that described by Kräpelin. Kräpelin's cases were those of later life, and differed from the melancholia which he found in manic-depressive conditions. There was in the so-called melancholia not so much absolute retardation of thought as in the class of cases of the manic-depressive type. Dr. Fisher said he had seen a number of cases occurring in young persons, perhaps about the age of twenty-five years, where they simply presented a psychosis which was described as melancholia, and where the patient made a complete recovery within three weeks to six months. He could recall one case in which at least fifteen years had elapsed since such an attack and there had been no signs of a recurrence. The speaker said he was certainly in favor of retaining the term simple melancholia, and he also believed decidedly in the manic-depressive type.

Anxiety Psychosis.—Dr. L. Pierce Clark said he was not in favor of the term involution melancholia. He thought of psychosis of the climacteric or the melancholia of involution should more properly be called an anxiety phychosis, because that seemed to be the great predominating factor. In the differential diagnosis of manic-depressive insanity and involution melancholia, the one essential feature was the retardation.

Involution Melancholia or Dementia Præcox?—Dr. A. J. Rosanoff said it was well known that depression was the most common symptom encountered among the insane. He thought that all forms of mental disease, without a single exception, might present this symptom. This fact perhaps accounted for the statement of the older writers with regard to the frequent occurrence of "melancholia." At the institution with which he was connected, and probably also at all other asylums, a considerable proportion of the depressed cases admitted had to be set aside as unclassified. The majority of these cases ultimately developed one or the other of the typical syndromes, but a small group still remained which could not be classified among the well-known psychoses. This group contained about five per cent. of the total number of depressed cases admitted to the asylum. This was merely a rough estimate, but the speaker said he felt assured that it could not be far from the actual figures. It had been proposed to designate these cases as "simple melancholia." It seemed to him that a new generic term would be entirely inapplicable to an extremely heterogeneous group of psychoses, such as these. With regard to manic-depressive insanity Dr. Rosanoff said it must be remembered that many cases presented during their whole life nothing but a number of attacks of simple depression. The diagnosis was made not at all from the occurrence of mania and depressive episodes in the same individual, but chiefly from the exceedingly well-defined symptomatology. He thought that Kräpelin had selected this term for the disease for the purpose of indicating simply that its manifestations might be either depression with retardation and dearth of ideas, or elation with restlessness and flight of ideas, or a mixture of these phenomena, but not that each individual case must present all the possible manic-depressive episodes. Some of the depressed cases of this disease were so mild that the patients were not committed, and were even able to continue their occupation; but even those cases presented the characteristic features of the disease, and one experienced in making the diagnosis of manic-depressive insanity would not have much difficulty in recognizing them. The occurrence of melancholia with anxiety and agitation at a comparatively early age had been referred to. The resemblance between these cases and those of involution melancholia of Kräpelin was only a superficial one. The speaker thought that probably almost all of them belonged to the dementia præcox group. On analysis their depression was found to be extremely shallow, it being at times but a simulated depression. Moreover, they presented mannerisms, stereotypy, neologisms, negativisms, emotional deterioration and

delusions of an exceedingly absurd or even impossible nature, contrasting with perfect orientation, intact memory for recent and remote occurrences, and a surprising alertness with regard to their surroundings.

Dr. Dana, in closing, said that on the whole, the position he had assumed in his paper had been largely sustained by those who had taken part in the discussion. He still insisted that there are two forms of melancholia, with a third that belonged more or less to one or the other. The two were the involution type and the manic-depressive. Outside of these, there were many cases of simple depression which he had learned from experience would never be anything else but simple depression, but which, if closely analyzed, would be found to belong to either the manic-depressive or the involution type. In his paper, the speaker said, he had confined himself to the functional types of melancholia, disregarding the group of simple symptomatic melancholias occurring in the course of organic brain disease. The classification devised by Dr. Parsons was very practical and interesting, especially for those working in institutions, but of course it was not intended at a text-book guide of melancholia.

A Case of Bilateral Facial Hemiatrophy.—This was presented by Dr. Edward D. Fisher. The patient was a young girl who about two years ago had an attack of persistent vomiting. Following this, progressive wasting of both sides of the face was noticed. There seemed to be no atrophy of the bone, but absolute loss of subcutaneous tissue. There were no sensory disturbances, no electrical changes.

Dr. B. Sachs said the case was unique, so far as his experience and reading went. It differed from the ordinary facial hemiatrophy in the wide distribution of the lesion, and the absolute disappearance of the subcutaneous fat without involvement of any of the other tissues. It was certainly not a scleroderma. The girl's body was apparently well nourished.

The Nature of the Nerve Lesion in Brachial Birth Palsy (Erb's Type).—Dr. Thomas P. Prout read a paper on this subject. He stated that the sequence of events in the production of the obstetrical birth palsies may be summarized as follows: The lesions are (1) immediate and (2) remote. The immediate lesion consists in a tearing of the perineural sheath surrounding and supporting the nerve trunk, and the incidental rupture of the blood-vessels belonging to it. Hemorrhage occurs into and beneath the perineural sheath. There is, furthermore, a severence of the nerve strands more or less complete, depending on the severity of the case. The remote lesion is brought about and its extent determined by (*a*) the healing of the perineural sheath; (*b*) the organization of the blood-clot; (*c*) the ultimate contraction of the cicatrix upon the nerve strands, which not only prevent their regeneration but determine a pressure neuritis in those not severed upon which it may chance to impinge. This factor is of very great clinical importance. An infant in which this accident had occurred, who remains more or less continuously peevish and fretful for some time afterward, and in whom the handling of the extremity greatly increases its pain and irritability, is suffering from a traumatic neuritis due to pressure upon certain nerve-strands of the organizing blood-clot and the contraction of the cicatrix in the perineural sheath. Cases that do not present this symptom have been produced by simple trauma to the nerve, without rupture of the perineural sheath, and will recover spontaneously, while in those cases presenting this sign of neuritis, a considerable palsy will follow, depending on the severity of the lesion. These facts have an important bearing on treatment.

Dr. Sachs said that a certain number of brachial birth palsies of the Erb type were due to pressure and nothing else. A large proportion of the cases were absolutely painless; there was simply numbness, but no pain, and no symptoms such as we could associate with a laceration of the nerve. The speaker thought that Dr. Prout took an extreme position in claiming that some of these cases, at least, were not due to pressure, and that laceration of the nerve was necessarily the cause of this type of birth palsy. There was no doubt that in some of the violent cases the nerve strands were torn, but in the large proportion of cases he thought the symptoms were the direct result of pressure and hemorrhage.

Dr. L. Pierce Clark thought from the data which he and Dr. Prout had at their command, that in the vast majority of instances the palsy was the result of stretching and laceration, and not of pressure. This was clearly demonstrated in the operative cases. In these, the recovery of the patient was uneventful, and the progress very satisfactory. The pathological work was particularly interesting, insofar as nothing like it had ever been done in connection with this type of palsy.

Dr. William M. Leszynsky said he understood from the paper that in those cases that did not undergo spontaneous recovery, surgical interference was necessary. That being the case, he assumed that Dr. Prout concluded that in all cases that recovered without operation, spontaneous regeneration of the nerve had taken place, and that those cases, therefore, had no lesion of the kind he described. The question therefore arose, when these cases should be operated upon and how could one know whether spontaneous regeneration would take place or not.

Dr. Prout, in closing, said that if spontaneous regeneration occurred, it was not necessary to operate. This could be fairly definitely known within a year or eighteen months after the birth of the child. The cases that did not recover spontaneously presented exactly the lesions he had demonstrated, which represented a condition in the perineural sheath of the nerve that prevented spontaneous recovery. It was well known that many cases recovered spontaneously, but those that did not were due to stretching and not to pressure. Those due to the latter cause would in all probability recover spontaneously. If they did not, however, pure pressure palsy was not dealt with.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

The Ninety-ninth Annual Meeting, held October 24, 1904.

The President, Wendell C. Phillips, M.D., in the Chair.

The proceedings began with reports of the various committees. The interesting features of these reports were the increase in membership as announced by the Comita Minora, and the improvement in the service of milk to New York City as the result of suggestions from the Milk Commission. There are now twenty-one farms that submit to regular inspection, and all together some five thousand quarts of the milk furnished to New York daily is obtained

under conditions entirely approved of by the Commission. Three other farms with a daily output of 1,200 quarts are getting themselves in readiness to submit to the Commission's regulations. There seems no doubt that before long only milk from regularly inspected sources will find a ready sale in New York.

Report of the Counsel of the Society.—Mr. Champe S. Andrews, the counsel for the Society, reported recent improvements with regard to the judicial view as to what constituted the practice of medicine in New York State. So far the medical law has threatened to be ineffective because of the absence of a wide enough definition of what constituted the practice of medicine. Recently a conviction before the Court of Special Sessions of a man who did not give drugs, but who insisted that "magnetism oozed from every pore of his body," and that this was the curative agent by which his patients secured health, has afforded the foundation for a precedent. The attention of the District Attorney's office was called to this decision, and as a consequence, it seems not unlikely that an authoritative definition along the same lines will be obtained from a higher court.

Number of Quacks.—Mr. Andrews said that there was a very large number of quacks in New York, and that only a few of them can be reached, mainly because of lack of funds on the part of the Medical Society. Recently the announcement that there were many thousand quacks in New York caused sensational headlines in the newspapers. To reporters who came inquiring as to the truth of this statement, Mr. Andrews said that if the New York newspapers would refuse to take the advertisements of quacks, and especially of abortionists, there would soon be fewer of them. It is the fact that they can so readily gain publicity through the columns of a supposedly respectable paper, that enables these people to carry on their nefarious business successfully. Mr. Andrews looks for the time very soon when special appropriation will be allowed for the purpose of securing the conviction of those who violate the medical laws. They are made for the protection of the community against those who have abused the confidence of the poor and the unwitting. The enforcement of the laws should be a matter of public policy and not be committed to the private exertions of a medical society.

Recent Pathological Advances.—The scientific business of the evening consisted of a series of short addresses, especially with regard to recent progress in various departments of medicine and surgery. Dr. Frederick E. Sondern spoke of recent developments in clinical pathology. He said that chemical pathology is progressing v ry rapidly, but unfortunately the amount of time required for the pursuance of any chemical examination, and the fact that any interruption of it is likely to spoil it, necessarily makes it almost impossible for the general medical practitioner to take it up. It can only succeed then in the hands of young physicians, or chemists who are not clinicians. This is, of course, an unfortunate state of affairs. Simplification of chemical methods, however, is undoubtedly common. It is very clear now that the neglect of the laboratory is as bad in the diagnosis of the disease as its exclusive use for diagnostic purposes.

Blood Pathology.—An improvement in the methods of examination for the coloring matter of the blood is sadly needed. Present methods are crude and inexact. This will evidently come along the line of examination of the absent amount of the hemoglobin and iron present in a given quantity of blood. It is leucemia particularly that blood pathology is developing. There seems no doubt now that besides acute lymphatic leucemia, which is coming to be well understood because of the number of cases observed, there is a true myeloid leucemia, that is an excess of white blood corpuscles, due to superactivity of the bone matter. Recent medical literature contains a number of existing cases of this kind.

Widal Reaction.—Dr. Sondern called attention to the fact that recent investigations seemed to make it clear that the presence of urotropin in the circulation gives rise to the Widal reaction even in persons who have never suffered from typhoid fever and who had no febrile condition at the time of its administration. Some recent experience in Japan with personal observations, shows how much better the Japanese use all the precautions necessary to procure an exact Widal reaction than is the custom in supposedly much more advanced countries. The amount of culture and of blood is taken very accurately, and the dilutions made according to very exact methods in Japan. It is only in this way that the Widal reaction can always be depended on. Dr. Sondern called attention to the fact that an increase in the number of leucocytes in infected cases is as yet of questionable value in regard to pus formation and the prognosis of the case. Careful differential leucocyte counts give much more satisfactory answers, than the mere number of leucocytes in general. Cytodiagnosis seems also to be gaining a foothold for itself as a diagnostic method. Dr. Sondern considers that present methods of diagnosis in examination of the urines are crude and apt to be indeterminate. It is probable that the amount of urea excreted in any one day or at any time, has no special significance unless the amount of material ingested by the patient is known. The present system of noting of history sheets in hospital wards, the number of grains of urea per ounce of urine does not give as much information as if the total amount of urea passed per day were always known. Owing to the uniformity of diet in hospital service, this would usually give some definite information as to metabolic processes and the course of excretion.

Antistreptococcic Serum.—Dr. William H. Parks said that Professor Escherich, of Gräz, has recently treated a series of scarlet fever cases by large doses of antistreptococcic serum, using as high as 150 c.c. of serum for a patient with reported good results. There was a time not so long since when the streptococcus was thought to be the probable cause of scarlet fever. Since the description of Mallory's bodies in scarlet fever, there has been a general tendency to consider that they probably represented the cause of the disease, and were very likely protozoic in nature. They certainly occur in all cases of scarlet fever, and may be found abundantly in the fluid obtained by blistering a scarlet fever patient. It is probable, therefore, that what Escherich really does is to prevent secondary complications in scarlatina, for it is well known that the streptococcus is likely to cause secondary infection in these cases.

Summer Diarrheas.—Studies made during the last year show that the summer diarrheas of children in our large cities in this country are not due to the dysentery bacillus, as was thought for a time, nor to any of the types of the Shiga bacillus. In fact, so far, it seems clear that acid bacilli are not concerned in the etiology of the disease. Some of the acid bacilli are found in normal individuals, while in some

cases of dysentery they do not occur. As would readily be concluded from this, dysenteric serum does no good in the treatment of the disease.

Diagnosis of Rabies.—Dr. William H. Park said that the diagnosis of rabies has apparently been very much simplified by the discovery that certain bodies resembling protozoa can be found constantly present in the nerve tissues of sufferers from the disease. They may be demonstrated even in a smear of the brain of an affected dog. They do not occur in normal animals. This would simplify very much one of the most serious problems in bacteriological diagnosis. Some discoveries are apparently about to be made with regard to tetanus. The question of injecting antitoxin into the sheaths of the nerves has been seriously discussed, and even tried in some reported cases. That some such method of injection was necessary has long been known and has recently been still further demonstrated by the observation that adrenalin will neutralize tetanus antitoxin, though it does not modify in any way tetanus toxin If the antitoxin is put directly into the circulation, it is sure to meet adrenalin in sufficient quantities to neutralize it very materially while the toxin continued to spread upward through the nerve, unaffected practically by the slight amount of antitoxin that may reach it if the injections are made in the ordinary way.

Water Purification.—The most interesting thing with regard to the improvement of the water supply of cities is the introduction of copper sulphate as an agent for the destruction of algæ. As is well known, this substance is a disinfectant, and will kill ordinary bacteria in twenty-four hours even in a dilution of one to 400,000. As in this dilution it is absolutely harmless, it would seem to be a valuable agent. It kills the algæ very rapidly in badly affected water, and especially gets rid of the fishy smell and taste, which has been so obnoxious in certain waters in which algæ grow luxuriantly.

Some Fads in Surgery.—Dr. Howard Lilienthal said it has been suggested that the word "fad" is due to the use of the three initial letters of the words "for a day," which so well represents the essence of the fad. It is defined by the Century Dictionary as a trivial matter, or as an important matter followed up with more zeal than sense. Medicine and surgery, of course, are sure to be fertile fields for fads. It is easy, however, to suspect really excellent modification of current practice as being fads. In surgery, here in America, the last twenty years have seen many unfortunate fads. Oophorectomy was supremely overdone, and though now this special organ is not so much abused, hysterectomy is as yet a fad for certain gynecologists. At the present moment the gynecological fad, however, is the rivalry to see which surgeon can remove the largest fibroma per vaginam. One is reminded of the expression of the old negro woman who said to the young woman going to the hospital, "Don't you let them cut your stomach. You go to Dr. So-and-So. He'll take out your tumor through the pajama."

Movable Kidney.—The supreme field for fads at the present moment is the movable kidney. Some surgeons cannot palpate a movable organ without wishing to anchor it. Slight amounts of mobility of the right kidney are so common in women that there might be serious question whether a fixed organ on this side were not more abnormal than a movable one. Mobility should certainly not be the only reason for wishing to operate on a movable kidney. So long, however, as it continues to be so remunerative, the fad will probably continue. All sorts of symptoms are traced to a movable kidney. Dr. Lilienthal has recently seen a gastric carcinoma, in which an operation for a movable kidney had been done within a year before death. As regards operations for Bright's disease, theory has always been against them, except in such acute cases as those operated upon by Reginald Harrison and now practiced, is also against them.

Radiotherapy.—There seems no doubt that radium will prove of great service in the treatment of malignant growths. Where such tumors are deeper than the skin, however, no one would think of using any form of radiotherapy until after the knife has been employed if the cases are operable. After extirpation as far as possible, then radiotherapy may be employed to assure a cure. There is no doubt, however, that in some cases these methods of treatment seem to stimulate malignancy. The newer things in surgery have a definite place, but it is only after old, well-tried and established methods are proven unavailing. To run after every new notion is to expose oneself, not only to serious error, involving life in the case of serious surgical operations, but also keeping the surgeon from proper-rounded development of his surgical skill. The poet's old rule still remains the best advice in this matter:

> "Be not the first to lay the old aside,
> Nor yet the last by whom the new is tried."

Business Methods in the Practice of Medicine.—Dr. John S. Thatcher said the reason for success in medicine is not always easy to decide. It is not always a man of the most brilliant attainments who succeeds the best, nor is it the man always of most go-ahead qualities who makes an eventual success. Energy and straightforwardness seem to be the main elements for the practice of medicine. Genius seems to be scarcely more than an infinite capacity for taking pains. A charming manner is sometimes said to be the secret of success. It has its uses, but it must be combined with other qualities. It is not the most affable plumber that you send for again, nor the most courteous carpenter who gets all your work. Some physicians delay the hour of their visits on the pretense of being so busy, but a prompt business-like method will be better. Directness and thoroughness are qualities that must be cultivated. The story is told of an old physician who, in a hurry one morning, advised the young man who called on him to take a prescription that he gave him and felt sure he would be better, but when the young man said, as he was about to leave, that he was the son of an old friend, the physician said, "For Heaven's sake, throw away that prescription, and let me look you over!" There is an unfortunate fear of the possible evil results of telling the truth to patients that has gone entirely too far. For the patient, it is often better to know the worst. Even in hopeless cases, he rises more manfully to the emergency than when he fears the worst and thinks that it is being kept back from him. For the family, knowledge of the truth is better than the fearful uncertainty when it is known that patients are seriously ill. Of course, there are those who say that the physician should tell the truth, but in small quantities. There is a growing doubt, however, of the advantage of this policy. Unfortunately, physicians are not able to accomplish as much as they would like to. As Alonzo Clark once said, "Disease may be cured, but death is inevitable."

Postgraduate Medical Instruction.—Dr. D. B. St. John Roosa said that New York City originated and organized postgraduate medical instruction in the English-speaking countries. In England, notwithstanding well-directed efforts in recent years, postgraduate medical instruction has been a conspicuous failure. This is especially true of London. Everyone who has been in the English capital knows what limited opportunities for postgraduate instruction are going to waste there. Nearly the same thing is true of Edinburgh. Notwithstanding what might be accomplished in their great infirmary, the Scots have not succeeded in organizing postgraduate instruction. Paris is without a system that encourages physicians to come for instruction, and there is no hospitality, so that medical visitors looking for opportunities are almost driven away. In general, it may be said that the work is not appreciated in France.

New York Postgraduate Medicine.—As the result of proper organization in this city from 750 to 1,000 physicians are attracted here every year for postgraduate work. The organization of this system of instruction was successfully accomplished at a time when New York had lost some of her prestige in undergraduate instruction, and was being overshadowed by Philadelphia, if not also by Chicago. As a matter of fact, the postgraduate medical instruction movement saved the medical center for New York. At the present time, however, the system is at a standstill for need of funds. It is possible that something may be accomplished by affiliation with the regular medical schools. This affiliation was refused when the postgraduate system of instruction was initiated. There is no doubt now that the postgraduate courses have come to stay. No matter how much the increase of instruction in undergraduate courses, physicians will still feel the necessity of coming in direct contact with cases in order to fit themselves for practice, and, besides, physicians who have been out of practice for many years, will occasionally want to come back in order to set themselves *au courant* with the state of medicine at a given time. Perhaps the greatest compliment that has been paid to the New York system of postgraduate instruction is the fact that the plan adopted is now being imitated in Cologne and in Frankfort. The future of the system depends on proper recognition of its merits and a due support according to its needs.

SOCIETY OF THE ALUMNI OF CITY HOSPITAL.

114th Stated Meeting, held April 13, 1904.

Some Practical Points in Medical Diagnosis.—Dr. Morris Manges spoke extemporaneously on this subject. He considered, (1) cerebrospinal meningitis; (2) paratyphoid; (3) perforation in typhoid. He said that it was impossible to determine or even to understand these epidemics of cerebrospinal meningitis. The particular type under consideration was characterized by a sudden onset and a fulminating course. He cited two cases which had come under his observation, in one of which the mother had died and was buried.—one and a half hours later, the daughter, eighteen years of age, was comatose from the same disease. In the other case a man had gone into coma within an hour from the first symptoms. The headache of epidemic cerebrospinal meningitis, he said, is characteristic. Typhoid is apt to be frontal, whereas this is very general, and it is so severe that the patients cry out even though in coma, the pain being dreadful. Vomiting and photophobia are common. The posture is characteristic, flexion being typical with the patient lying on the side. The eyes are frequently bloodshot and the pupils irregular, face dusky and anxious. Herpes is typical of pneumonia and cerebrospinal meningitis. But the symptom is of more value in this disease than in any other for diagnostic purposes. As in typhoid, relapses are very common. The reflexes are soon diminished and König's phenomenon is always present. The eruption is variable both as to distribution and as to type. It often looks as though a rough brush had been used freely in the neighborhood of the great joint. The leucocyte count is usually high, not infrequently reaching thirty thousand. In establishing a differential, it must not be forgotten that there may be sugar in the urine, from cerebrospinal coma. Lumbar puncture is invaluable to prove the diagnosis without question, and as it has a distinct therapeutic value and does no harm, it is certainly indicative. The speaker advised the injection of a few drops of lysol directly into the spinal canal.

Paratyphoid.—The chief interest in this disorder centers in the fact that it affords an explanation of the so-called cases of short typhoid. It is characterized by the presence of the paracolon bacillus and by the absence of Widal reaction. Paratyphoid is simply not typhoid, its etiology being complex. It should therefore be called pseudotyphoid. Further differential points, which serve to distinguish it from typhoid are as follows: The facies are different. The patient appears more ill, there being a high flush over the malar bones. The spleen is apt to be larger. The rash is extremely profuse; this probably serving to explain the well-known old-fashioned belief that a free rash in typhoid is a good sign.

The classical picture of perforation is usually very untrue. The most important symptom is the question of degree and position of the pain. The pain of perforation and the normal pain of typhoid are often indistinguishable. The author considers that severe referred pain in the tip of the penis is pathognomonic of perforation. Collapse is invariably present if the perforations enlarge, and is equally sure to be absent if they are small. There is a distinct change in the general condition of the patient, although it is difficult to state the exact nature of this change. The pulse usually rises. It loses its dicrotic character. The condition of the abdomen is variable, distention being of little or no diagnostic value. What is characteristic is muscular resistance and rigidity, it being typically located over the perforation. In conclusion, he said, that in nineteen cases a sudden onset had augured favorably for the patient, simply because it had enabled surgical intervention to be practised. No one should be asked to give the positive symptoms of perforation, for if they exist, they have not yet been determined. The question of surgical intervention should be left open much as in the case of appendicitis. Probably 90 per cent of cases of perforation do not die, for in all probability a great many perforate which are never recognized. There is but one treatment, namely, operative, and that should be instituted even if there is only a suspicion of perforation.

Wood's Footsore Moros.—Gen. Wood says that the native constabulary paid by the United States are crippled by shoes, lose their stamina by wearing "civilized" clothes and are made fat and short-winded by an unaccustomed diet. The history of colonization is full of tragic instances of the evil effects of interference with the ways of primitive races.

BOOK REVIEWS.

A Treatise on Obstetrics. For students and practitioners. By Edward P. Davis, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia, etc. Second Edition. Illustrated with 274 engravings and 39 plates in colors and monochrome. Lea Brothers & Company, New York and Philadelphia.

It is a pleasure to find an obstetrical text-book which does not begin with a description of the mons veneris and devote the first hundred pages to an anatomical description of the female generative tract. The writer appropriately considers the subject of obstetrics a senior study, and assumes that the student shall have become familiar with ovulation, menstruation, impregnation and the anatomy of the pelvis from other sources. The work is strictly an obstetrical treatise, possessing most commendable radical changes in the arrangement and presentation of the subjects. Much of the old nomenclature has been dropped and the mechanism of labor, fetal presentation and position has been simplified.

The author adopts the German plan of considering but two fetal positions. Cases in which the back of the child is directed to the mother's left are called first positions. Those in which the back of the child is toward the mother's right are called second positions. Cases in which the presenting part is not in front are considered instances of defective rotation rather than separate positions. A permanent and most excellent section of the book is the part devoted to the surgery of pregnancy, labor, and the puerperal state. Realizing how much suffering may be avoided by prompt repair of injuries received during labor, careful attention has been paid to the description of proper surgical procedures.

The chapter on milk modification and artificial feeding is brief and incomplete, the writer evidently intending that the reader shall acquire knowledge of other than the fundamental principles of the subject from other sources. A chapter is devoted to a brief description of the more common diseases of infancy, a convenient section for hasty reference or review.

The last section on the Jurisprudence of Obstetrics affords interesting and profitable reading.

This second edition has been thoroughly revised, is well-illustrated, well printed, neatly bound and is without question one of the best books on the subject that has yet been published.

Manual of Serum Diagnosis. By Dr. O. Rostoski, University of Würzburg. Authorized Translation by Dr. Charles Bolduan. First Edition. John Wiley & Sons, New York. Chapman & Hall, London.

This book is in part a translation, in part an amplification of Rostoski's short treatise on serum diagnosis, published in the *Würzburger Abhandlungen*, in 1903. The material on which the original German work was based has since that time become considerably more voluminous, and Dr. Bolduan has therefore, very judiciously added many important details upon serum diagnosis. There is also an important appendix embodying Wilson's conclusions on the Gruber-Widal reaction. The volume is, therefore, a reliable and thoroughly modern treatise on serum diagnosis and allied topics, both from the theoretical and the practical standpoint. The student of these phenomena can learn the essentials of serodiagnosis, as far as they have been elaborated in typhoid, tuberculosis, scarlatina, etc., in this little volume. For a complete or profound analysis of the problem, however, he will have to consult the larger works and the original authorities.

Accidents and Emergencies. A manual of the Treatment of Surgical and Medical Emergencies in the Absence of a Physician. By Charles W. Dulles, M.D., Fellow of the College of Physicians, of Philadelphia, and of the Academy of Surgery; Surgeon to the Rush Hospital, etc. Sixth Edition, revised and enlarged with new illustrations. P. Blakiston's Son & Co., Philadelphia.

The appearance of this latest edition of a charming and well-known little book is welcomed by all. The present volume has been carefully revised, many illustrations and much new matter having been specially prepared for it. Particular attention has been given to the notes on accidents arising from contact with powerful electrical currents, good common-sense instruction being given in the very important method of how to remove a person who has been caught in such a current. A very important chapter is that which deals with the transportation of injured persons. The photographic illustrations of the methods employed are particularly serviceable to all readers.

A striking feature of this little book is its remarkable versatility, the chapter on the treatment of poisons and on poisonous plants being particularly significant in this respect.

Blood Pressure, as affecting Heart, Brain, Kidneys and General Circulation. A practical consideration of Theory and Treatment, by Louis Faugeres Bishop, A.M., M.D., Physician to the Lincoln Hospital, New York City. E. B. Treat & Co., New York, 1904.

Too little is as yet definitely and finally known as regards blood pressure for a monograph with regard to it to be other than theoretic. Dr. Bishop's book is mainly concerned with the theory of the subject, though it also contains the details of some observations on medical patients with the Riva Rocci Sphygmomanometer and some really suggestive hints as to the treatment of patients in whom high arterial tension is a main feature.

Clinical Lectures on Mental Diseases. By T. S. Clouston, M.D., Physician Superintendent of the Royal Edinburgh Asylum for the Insane. Sixth Edition. Lea Brothers & Company, New York and Philadelphia.

It is always a mental enjoyment to find a book that has gone through five editions, extending over a number of years that has been able to keep its old moorings because of their soundness and yet find it laden with much of the newer fruits of research.

It can be consistently said of Clouston that the body of his work remains the same because it was so excellently done in the first place. No one has exceeded him in the clearness and directness of his clinical pictures.

In modern psychiatry two distinct trends are observable among the many streams of new thought—the pathological and the psychological. Modern psychiatric pathology is being attached by the same methods of research as general pathological questions, much to the advantage of psychiatry. In this line Dr. Clouston has been able to keep his work well advanced, although at times he permits the "auto-intoxicationists" about him to sweep him away from these same general pathological truths.

The newer psychology, however, is not as well revealed in this present instance as we should like to see. In this respect we believe that Clouston lays behind the modern treatises of Lichen, of Wernicke, Kräpelin, Tanzi and others. Nevertheless, for students or non-psychologically trained practitioners we know of few safer books to recommend than this.

THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

THE EFFECT OF HYSTERECTOMY ON THE SEXUAL FUNCTION.[1]

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IT was with some reluctance that I responded to the invitation of the Chairman of the Obstetrics Section to write a paper on the subject. I fully appreciated the honor implied by the invitation, but had a strong sense of my inability, with the time at my disposal, to present the subject in a manner worthy of this body.

The whole question of sexual passion in women is surrounded with great vagueness, and it is not possible to make any definite statements regarding it.

Women, especially those in this country, are very loath to discuss matters relating to their sexual feeling, and what statements they do make in reference to it cannot always be accepted without reserve. Hence it is that I seldom interrogate my patients on that point, and further I have learned from experience that if they are really devoid of any sexual desire or pleasure they will of themselves volunteer the statement. A still further reason for my not investigating the presence or absence of the passion is that in my opinion it has very little bearing, as a rule, upon the conditions for which the patient seeks advice.

In sterility, where it is popularly held that the absence of sexual desire forms an important etiological factor, I have long ago learned that it plays absolutely no rôle. Some of the most fruitful women that I know, women with large families, are totally devoid of any sexual appetite. On the other hand, I know women with small, undeveloped uteri, in whom conception is a physical impossibility, and yet who have the sexual passion developed to a high degree.

This leads us to the question of the seat of the sexual passion in the human female.

Albert Moll,[2] who has written an exhaustive and scientific treatise upon the subject, divides the sexual instinct of the human adult into two components, (1) the detumescence instinct is that which forces to a local function of the genitals, and in man to an ejaculation of semen. It is to be considered as a purely local process, an organic stress to the discharge of a secretion, just as is the desire to urinate when the bladder is full. (2) The contrectation instinct is that which forces the man to a bodily and to a spiritual approach to the woman, and similarly the woman to the man.

Phylogenetically the detumescence is the primary means of procreation, being the only instinct present when procreation is accomplished by one parent, as in some plants and lower animal life.

The contrectation instinct is only a secondary manifestation, when a stage is reached in evolution that requires two individuals for procreation.

In women, in the evolution of the stock, the detumescence has become separated from the function of the generative glands (the ovaries), although originally both processes were united.

The detumescence instinct has its center in the lumbar portion of the spinal cord; the contrectation instinct has its center in the cerebrum.

Accepting Moll's definition as correct, we can readily understand why the sexual passion is less strong in woman than in man, an observation that has been made by several authorities. It also explains why, in woman, the individual plays a much greater factor than in man. We all know that with man it is often "any port in a storm," but when a woman betrays such a tendency we look upon it as a morbid condition known as "nymphomania."

We find in it a further explanation of the phenomenon, not infrequently observed in women, of a strong desire to be fondled and embraced, which may even be associated with an overpowering repugnance to the sexual act itself. Time and again I have had husbands tell me that the sexual act to their wives was repulsive to a degree, although kissing and tender embraces were not only enjoyed by them, but seemed to be a passion with them.

From what has gone before we are prepared for the statement, which otherwise might seem rather startling, that the removal of the uterus and adnexa from an adult woman has very little effect upon her sexual passion.

This statement is based upon the writer's own recent investigation and from a perusal of the reports of several operators. I am perfectly aware that the opposite has been the popular belief, and I will grant that the belief has some foundation. Until about two decades ago the only knowledge we had of the effect of the removal of the ovaries from the human female was based upon the facts related by travelers from countries where it was the custom to castrate girls before the age of puberty.

For instance, Ploss, in his wonderful work, entitled "Das Weib," quotes Roberts who relates in his travels from Delhi to Bombay of having seen a girl from whom the ovaries had been extir-

1 Read at a stated meeting of the Academy of Medicine as part of a symposium upon the After-Effects of Hysterectomy, Oct. 6, 1904.

2 Untersuchungen über die Libido Sexualis, H. Kornfeld, Berlin, 1898.

pated. The girl had no breasts, nor any hairs nor fat on the mons veneris. She had considerable hair on her chin and upper lip, and had a decided masculine appearance. She was utterly devoid of any sexual desire. Travelers in Queensland describe similar instances of removal of the ovaries before puberty with the same after-effects. It is no doubt from remembering such tales that at the present day the operator is occasionally met with the tearful query, "Doctor, if you remove my ovaries will hair grow on my face, and will my disposition change and will I become masculine?" I will not say that the belief has not found some foundation even in modern days when in the early days of gynecological abdominal surgery it was the custom to remove practically normal ovaries from fairly young girls for all kinds of nervous ailments. I am glad that it fell to my lot to become active in gynecological surgery when that wave of blind enthusiasm had entirely receded. My own experience therefore relates to cases in which hysterectomy was done for marked disease of the adnexa or for disease of the uterus, such as benign and malignant growths.

Since learning of the part I was to take in the discussion to-night I wrote to several of my patients, of the more intelligent class, whose uteri and adnexa I had removed for disease. The invariable reply was that the operation had had no effect upon their sexual passion one way or the other. Prior to this investigation, in a few instances, patients had volunteered the statement to me that they never knew what sexual pleasure was until after the operation had been performed. In a few other instances women had told me that the sexual appetite had increased in a marked degree subsequent to the operation. I can recall no instance where a woman had told me that the operation had destroyed her sexual desire or pleasure. In all of the above instances the operation was done for very advanced disease on both sides, with extensive adhesions to the pelvic floor. We can readily conceive that in such conditions the sexual act would be attended with more or less pain, and in consequence a feeling of fear or repulsion would be engendered.

Drs. Mandl and Bürger,[1] of Vienna, have recently written an exhaustive monograph on the subject of the effects following the removal of the uterus and ovaries. The effect of the operation upon the sexual passion is given by them with that fulness of detail which could only be obtained from a *clientele* who are not ashamed to discuss the sexual feelings with openness and candor. They investigated the subject in 22 women. In seven cases there was absolutely no change in the sexual passion. In nine cases there was a decrease, and in the remaining six cases there had been no sexual intercourse following the operation. Of the nine women who said there was a decrease, several were rather advanced in years and would naturally experience a diminution of the passion.

The conclusion I would draw from my own experience and from a study of the literature on the subject is that whatever other effects the removal of the uterus and ovaries may have upon the female human economy, it has little or none upon her sexual feelings.

751 Madison Avenue.

1 Die Biologische Bedeutung der Eierstöcke, nach Entfernung der Gebärmutter. Franz Denticke, Leipzig u. Wien, 1904.

THE DIFFICULTIES OF ANESTHETIZATION AND THEIR CORRECTION.[1]

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The difficulties of anesthetization necessarily comprise those arising during administration and those arising during convalescence. These two classes will be considered in the order in which they occur. The fright and misunderstanding which are at the basis of hesitating, imperfect or suspended respiration during the early stages of narcosis may be alleviated by suitable reassurance and explanation. Deliberation and care in administration will likewise correct the reflex irritation so frequently an element therein. These difficulties may arise during nitrous oxide administration and then indicate admission of air. Crying, frequently seen in children, occasionally in adults, is entirely trivial excepting during chloroformization in children, when the long inspiratory stage so frequently observed may lead to overdose. The falling back of the tongue may excite persistent hesitation of respiration even after the early stages and is best corrected by a mouth gag of moderate size and the use of tongue forceps. Muscular movements give evidence of excitement; and muscular rigidity, of an obscure nervous reaction which may be exceedingly inconvenient, especially when it attacks the masseters. Rigidity is most apt to be localized in all the extensors, and no subject is suitably narcotized until this rigidity is absent, a condition which occurs, as a rule, after the judicious increase of the drug used, although occasionally advent of air will secure it. The movements may be conscious, subconscious and unconscious, and are frequently well coordinated although not necessarily directed against the anesthetist or the apparatus. The gentlest possible restraint to overcome them is indicated, as violence is more apt to increase than to diminish them. Tonic movement analagous to the tonic spasm of asphyxia indicates fresh air or a change from ether to chloroform or *vice versa*. Clonic movement is very common, usually located in the lower extremities but rarely generalized. Brewer has reported a case in which the patient nearly shook himself from the operating table no matter what anesthetic or combination of anesthetics was employed. These muscular movements usually indicate imperfect administration, hysteria, drug habit and perhaps most commonly of all, a premature invasion of the operative field, especially if

1 Read before the Society of the Alumni of the City (Charity) Hospital, October 12, 1904.

sensitive. Cough occurs during slight anesthesia after additional drug has been applied. It is founded most frequently on a long uvula and the adenoid diathesis and what might be called the tobacco throat. It is treated by removal of the anesthetic until the individual spasm ceases and then by a gradual increase in the anesthesia or a change to another anesthetic. Here again if chloroform is used care should be exercised not to overdose during the deep inspiration after the cough. Hiccough, while of minor importance to the anesthetist, may trouble the operator through the spasmodic action of the diaphragm and abdominal parietes. It is most frequently set up by manipulation of the intestines and gall-bladder. If marked, treatment is of little avail although a brief cessation of operating followed by a deepening of the narcosis may check it.

Stertor is, far more than most operators fancy, purely a matter of valve-action between the soft palate, pharynx and tongue, being in these circumstances entirely analagous to snoring. If the mouth is held open and the tongue forward it is possible to carry a very large number of patients through etherization as quietly and as stertor-free as during chloroformization. Stertor may also be caused by mucus in the throat, being in this analagous to bronchorrhea. The prophylaxis of bronchorrhea consists in care in administration. The cure of it frequently occurs after a single large dose of atropine. The mucus should then be wiped away from the throat or drained away with gauze.

Retching and vomiting are not only difficulties but dangers because they interfere with the operator, may readily cause inhalation pneumonia and be directly followed by death, especially with chloroform. The best correction of them is to free the mouth of instruments, to allow the paroxysm to pass and then to deepen the narcosis rather rapidly and steadily. The most important single cause is intestinal obstruction during which regurgitation often without esophageal movement occurs. Rose's position is the safest for these individuals, because the stomach contents may rest in the vault of the pharynx while being wiped away without interfering with breathing. The nose also in this position frequently will allow the vomitus to flow out while the patient breathes through the mouth. Hewitt recommends turning the patient slightly upon the side so that a similar reservoir is obtained in the lateral regions of the nasopharynx. Sneezing may occur as a minor difficulty dependent upon a chronic hypertrophic nasal catarrh. Cocainization is the indication.

We now pass to the major difficulties, properly the dangers, of anesthetization. Respiration may be occluded by altered position, spasm, swelling of the parts within or around the upper air passages, such as falling of the lips together in the edentulous, apposition of the turgescent tongue, soft palate and pharyngeal wall, and spasm of the jaw, larynx or chest. Each condition carries with it self-evident indication. The swelling of the mouth contents is the most common. The average case does better with mouth gag and tongue forceps than without. Adventitious substances, too numerous to mention, may likewise obstruct breathing. The most common are blood, vomitus, mucus, tooth plates and the like. Removal of the offender is required, but tracheotomy may be the only means of rescue. For this reason it is good practice never to attend an operation as anesthetist without a full tracheotomy set. Posture may arrest breathing by direct prevention of chest expansion; for example, the prone or semi-prone position in kidney cases, in which the chest should be elevated from the table by a sandbag across the clavicular regions from shoulder to shoulder, as pointed out by me in an article upon this subject about a year ago. Morbid states like ascites, empyema, pleurisy and hydropneumothorax are also elements in obstruction of respiration. After considerable experience the writer believes that the average case of ascites, empyema or pleurisy will take the anesthetic with comparative safety, if the fluid is drawn some hours before the operation, thus removing the obstruction so far as possible. Operations upon the thorax and abdomen may cause a reflex arrest of breathing which is very difficult to deal with. The writer has never seen more than trivial cases thereof, which improved as soon as the operating was suspended. Paralysis of breathing may be wholly or partially due to overdose, almost always comes on slowly and is shown by a progressively shallower and shallower respiration, finally by irregularity and then by cessation. Sometimes the arrest is sudden as in chloroform, but is usually preceded by circulatory symptoms. Shallow breathing with good color, a strong pulse and normal pupils, which continue so is a good sign; whereas shallow breathing with pallor, cyanosis, rapid uncertain pulse, dilated fixed pupils, inefficient capillary circulation, is a sign of impending death from the anesthetic. The anesthetic should be immediately removed, and free stimulation and active artificial respiration resorted to. Hewitt suggests rubbing the lips vigorously from side to side upon the teeth as efficient means of causing deep respiration. The author has tried this on several occasions and has not been pleased with its results.

Respiration may be paralyzed by causes other than overdose of anesthetic; for example, chloroform may so lower the circulatory pressure as to produce profound cerebral anemia; similarly, changes in posture especially from the cerebral turgescence of Trendelenburg's position followed by the anemia of the horizontal position, or the horizontal followed by the sitting posture. What may be called changes in the mechanics of the circulation are exceedingly dangerous from this one source. A preliminary dose of morphine may add to the danger. Absolute inhibition of respiration may occur and is said to be common in adenoid and tonsil cases under chloroform. Such

cases must be rare where there was not some mechanical obstruction to the larynx such as by blood. Removal of this quickly restores the patient. In every such case the anesthetist should open the mouth widely and pass his finger into the cavity of the larynx to explore for the presence of offending foreign objects. Stimulation, artificial respiration and infusion will probably do the rest if there is any hope for the patient.

The circulatory dangers of anesthetization are perhaps less important than the respiratory, excepting such as are inherent in chloroform. Impairment of health in general, as seen in anemia, jaundice, nephritis, hepatic cirrhosis and grave respiratory diseases predispose to them, as do fear, the sitting posture, and food and fluid in the stomach. These circulatory dangers may be directly caused by any of the impediments of respiration previously enumerated, by the direct effect of the anesthetic as chloroform, by the surgical procedure itself, especially perhaps in the neck and the regions of the stomach, and finally by the changes of blood pressure during vomiting. The author has never seen a sudden case of cardiac failure excepting in a soldier already moribund from typhoid fever contracted in Cuba during the Spanish-American war. He was being anesthetized for a laparotomy for perforation. The medical staff requested interference; the surgical did not wish to undertake it, but yielded. The man died suddenly in the etherizing room after a few whiffs of anesthetic. In other cases circulatory difficulty was always indicated by failure of capillary efficiency. This is tested by squeezing the blood out of some convenient point and watching the promptness of its return. No points are better than the finger nails, lips and the malar regions and the lobes of the ears. The finger nails are first choice because the anesthetist may always compare his own capillary circulation with that of the patient. If there is a distinct slowness, it has been the writer's practice to stimulate and never has regretted following this indication. As a precursor of shock it appears before the nose is cold or the skin even slightly moist with perspiration. It appears before one could be certain of changes in the quality of the radial or temporal pulse. It usually precedes even acceleration of the pulse and taking all in all in the *sine qua non* of circulatory tests.

Cyanosis may have its origin in respiratory or in circulatory factors. When due to respiratory conditions it may arise from absence of air, laryngeal spasm, concentration of vapor, direct obstruction of the upper air passages, interference with respiratory movements of the chest through factors in the chest or in the abdomen, like empyema, edema of the lungs and ascites. The correction of these conditions has already been enumerated under other headings, and need not be repeated excepting, perhaps, the dictum that the upper air passages should always be most carefully explored with the finger and when no proper cause is found auscultation of the chest must immediately be done. The writer has had the privilege of saving one subject from death from edema of the lungs by exactly this step. Circulatory cyanosis may mean, of course, imperfect aeration but usually means flagging heart. It is always accompanied by inefficient capillary circulation which constitutes the chief differential diagnostic point between pure circulatory and pure respiratory cyanosis. Free cardiac stimulation is required.

The difficulties of convalescence from anesthesia is a subject which most authors neglect. In my opinion proper care during the first twelve hours of recovery is equal in importance to skilful administration. The features of recovery may be stated as dependent upon the duration of the operation, the amount and kind of anesthetic employed and the character of the administration. For example, the average patient should be able to talk coherently in about fifteen minutes after withdrawing the anesthetic, no matter what the character or nature of the operation may be, because the skilful anesthetist will so vary the degree of anesthesia as to make this possible. On the other hand, the author knows of a case that did not recover for seven hours from the anesthetic because a veritable tyro administered nearly twenty ounces of ether in less than an hour, notwithstanding the fact that the patient was a temperate individual. Hewitt recommends that on return to bed if the pathological condition permits, the patient should be turned upon the side. The tongue then drops to that side of the mouth, the air passages open, stertor ceases, mucus and saliva gravitate out of the mouth and not backward into the throat and coughing is prevented because the tongue, soft palate and pharnyx separate and because mucus leaves the mouth of the larnyx. A competent nurse or the anesthetist should stay with the patient until distinct signs of recovery are present in order to institute restrained stimulation or other treatment as need may arise. Pallor and feebleness of pulse may show shock but will then be accompanied by cold extremities and nose and feeble capillary circulation. They are more apt to mean threatening vomiting or the result of withdrawing a stimulating anesthetic as is the case with ether. The question of nourishment during convalescence may be difficult, especially if the patient is suffering from protracted vomiting. The best treatment for the general run of cases is to allow the patient all the hot water he will drink. If inclined to vomit he has the substance present to eject which is very much less damaging nervously than dry retching and at the same time the water washes the stomach free of the ether-laden mucus. Food may be given as soon as the patient expresses real appetite for it, and should be fluid and predigested for the first twenty-four hours. Food in the stomach prior to the administration of the anesthetic, the character of the

anesthetic used, especially ether, personal idiosyncrasy, the nature of operation, particularly intestinal organization, are factors in the after-vomiting. In the protracted case perhaps the most sensible thing is lavage.

Finally, in closing, one detail should be emphasized which is very largely neglected, especially in institutions, and that is not to expose the patient so as to endanger a check of the perspiration, which is usually profuse and always present during recovery. The best recoveries occur when the patient is wrapped in several thicknesses of blanket from head to foot, leaving only the face exposed and thus constituting a veritable hot pack. When the patient is fully conscious he may be uncovered part by part, rubbed down with a bath towel and dry clothing applied. This procedure renders congestion of the lungs unlikely and, in fact, tends to relieve congestion of the kidneys also. The writer has practised it now for two years in all cases and has yet to see the slightest objection to it.

HYPERACUTE MELANCHOLIA: REPORT OF A CASE.

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SINCE M. Baillarger demonstrated stupor to be the highest expression of acute depressive insanity, it has generally been so considered by the French school of which Prof. Régis, of Bordeaux, is in this country regarded as the modern exponent. To this latter author we are indebted for the term "hyperacute melancholia," a condition which he declares stands in the relation to melancholia that acute delirium does to mania. He further states that "the majority of foreign authors recognize and describe under the name of attonität and of katatonia (Kahlbaum), conditions which are fundamentally, as Séglas and Chaslin have recently demonstrated, nothing else than melancholia with stupor, under its different aspects and in which predominate either the phenomena of hebetude or spasmodic and cataleptic symptoms." With this conception of the psychosis, the following is the report of our case:

Mrs. R. L., aged twenty-four years, white, married six years, has three children, age of youngest ten weeks, high school education, member of Christian Church, admitted to hospital June 26, 1903, the disease having existed 2½ months prior to admission. No history of heredity of psychosis or neurosis; assigned cause ill-health and puerperium; last confinement was on April 17, 1903; previous to this she was delusional. Patient was very melancholy and restless; not suicidal or homicidal; had delusions of unworthiness that she had lost the key to heaven and had committed the unpardonable sin; at times she was very gloomy and restless and required restraint.

When admitted, she was in a condition of marked motor and mental unrest, with pronounced depressive features; the symptoms were progressive and in a few days the clinical picture presented was that of melancholia agitata—marked bodily unrest, wringing of the hands, crying and moaning, walking aimlessly back and forth in her room and voicing delusions of painfully depressed, gloomy and self-depreciatory contents. This state persisted for a week and was followed by a progressively deepening stupor.

At this time the physical condition was as follows: Temperature 98° F., pulsus melancholicus typical, 100 to 110 in the morning, mounting to 120 in the afternoon without a corresponding temperature excursion; peripheral circulation sluggish, hands and feet cold and violaceous; heart-impulse weak, no murmurs, action regular; cutaneous and mucous surfaces pale and anemic; skin leaky and covered with an ill-odored, oily perspiration; lips dry and covered with brown crusts and the teeth with sordes, resembling the typhoid state; pupils react very sluggishly to light and accommodation; patellar reflexes notably heightened as in paresis; facial lines obliterated, expression blank, with occasional painful alterations; mutism absolute; mental and physical negativism marked; tongue heavily furred and coated; bowels obstinately constipated; involuntary micturition and defecation.

The mental condition at this time was that of profound stupor—the acute dementia of Esquirol. Consciousness was deeply clouded, with amnesia for the stuporous period—the acme or critical stage of the disease—which persisted for twenty-six days. During this time, the patient lay prone in bed, immobile and resistant and requiring to be medicated and fed with the feeding tube inserted through the nose.

One week after admission, acute bronchitis developed and persisted for ten days, during which period there were the ordinary constitutional disturbances, and, in the latter stages, a large amount of mucopurulent expectoration. The debilitating effects of this pulmonary incident, superimposed upon the already cerebral asthenic state, doubtless were influential in prolonging the mental disease.

From admission, June 26, 1903, to July 13, 1903, a period of seventeen days, there was persistent insomnia, the patient obtaining but one or two hours of broken sleep during the twenty-four hours. It will be observed, however, that the attack of acute bronchitis above mentioned, and the insomnious period were coincident—a fact not unworthy of mention when we speak of the agrypnia.

And here let me advert for a moment to the subject of hypnotics in psychiatric practice. It seems we are not employing an altogether rational, but rather an empirical therapy in this direction. Speaking from the vantage ground of four years' experience among the insane, where one would reasonably expect to meet with the

more aggravated and obstinate forms of insomnia, I would say that the continuous employment of the narcotizing and depressing agents usually administered during the acute stages of insanity has proved of doubtful utility, and in some instances has produced pronouncedly baneful effects, such as a prolongation of the psychosis and an increased tendency toward secondary dementia, effects like those produced by the earlier methods of treatment of insanity, namely, purgation and blood-letting, that is to say, depressing and debilitating measures. So I would say, be very sparing with hypnotics, chloral, hyoscine, sulphonal and their many kith and kin. Only in the severer grades of insomnia are these agents admissible, for they are toxic, potent and depressing.

The reason why they are not admissible is not far to seek; it is because the conditions with which we are dealing are conditions of cerebral fiber and cell intoxication (from gastric and intestinal auto-intoxication) and inanition as well —the cells and fibers of the central nervous system are bathed in the already toxic and débris-laden fluid of the perivascular spaces and lymph-cisterns; consequently there is a true phrenasthenia—brain debility; hypnotics are all in some measure depressant and are therefore contra-indicated in these states of brain-tissue exhaustion and weakness. Think of administering aconite to a subject with fatty degeneration of the heart or with advanced chronic myocarditis! Think of administering the coal-tar derivatives to subjects of senile pneumonia! Can it be that we are practising the Hahnemanniac folly, "*similia similibus curantur*" by treating depressed states with depressants? When the genesis and causes of insomnia are better understood, it may be that hypnotics will be less frequently and more rationally exhibited.

During the night of July 27, our patient was restless for about two hours in the latter part of the night; with this exception, she was never reported by our night watches as awake at night from July 13 until convalescence. From August 1, improvement became noticeable and progressed slowly to ultimate and, so far as her husband and myself could determine, complete recovery, the psychosis having persisted for four months.

Treatment consisted of measures calculated to improve the general health, to overcome the anemia—the erythropenia and oligochromemia—to flush the convolutions with a better aerated and nutritive-laden blood-stream; to supply the wanting nerve-elements phosphorus and fats; to aid the system to eliminate the products of convolutional and central-fiber disease, namely neurin and cholin and allied toxic débris; and to remove by appropriate measures, fecal and urinous accumulations, the results of the profound melancholic inhibition.

To be more explicit, treatment consisted in the administration of the elixir of iron, quinine and strychnine, and the combination of cod-liver oil and extract of malt given with warm milk—an emulsion not unpalatable and of the highest nutritive value. As a laxative and cathartic, a mixture of the fluid extract of aloes and elixir of cascara, with occasional doses of magnesium sulphate was employed, never permitting the bowels to go longer than two days without a movement. Tube-feeding was practised twice daily for a month, rendered necessary by the persistent paralysis of appetite and muscular and mental negativism.

One fixed idea we kept steadfastly in mind, namely the disease is one of inanition; in the language of Berkeley, "nutritive disturbances of the cerebrum being the principal causative factor (*i.e.*, of melancholia) psychical distress and a sense of woe and uneasiness are the ways by which the brain expresses its lack of proper nourishment;" and, as Romberg long ago declared, "pain is the prayer of a nerve for better blood." Melancholia, we believe, is the wail of an exhausted brain. Therefore along with an abundance of nutritious food, we gave hematics and stimulants, not only to improve the quality and quantity of the blood, but also to force it in more abundance to the starved nerve-centers; and for this latter purpose a combination of synergistic cerebral stimulants was employed, consisting of caffeine citrate, spts. frumenti, and quinine sulphate. Convalescence was slow but noticeable and in four months our patient was recovered. The usual duration of this, the gravest of the various forms of acute melancholia, is from six months to a year and a half in recoverable cases.

We believe, with Shoemaker, that "therapeutics is the superstructure of medical training," and we are endeavoring daily to practise a more rational therapy—with failures, yes, more than enough, but with many happy successes, of which this is a noteworthy one.

Concerning the pathology of this form of psychosis little is known. Edema of the brain has been said to be its characteristic lesion. W. Bevan Lewis' tables are of interest in this connection, as regards the blood-states of stuporous adolescents; he found the hemoglobin reduction ranging from 55 per cent. to 90 per cent.

Berkeley writes: "Nothing definite is known of its pathology (*i.e.*, of melancholia). In chronic cases there are evidences of old anemias, venous congestions of a passive form, edema of the pia and of the brain substance, and even general atrophy of the convolutions."

Whitwell's observations, consisting of "careful measurements of the blood vessels at the base, by the graduated cone, led him to infer the presence of a congenital narrowing of their lumen, associated also with a universal cardiovascular enfeeblement."

David Orr's work, reported in *Brain*, Summer Number of 1902, is a valuable contribution to this comparatively unknown subject of psychopathology. His findings in a case of stuporous

melancholia which came to autopsy were in part as follows: In a section taken from the fronto-parietal cerebral cortex "the great majority of the large and medium pyramidal cells are readily seen to be affected by a central chromatolysis associated with pallor of the nucleus." He also noted "a well-marked perinuclear chromatolysis of the large cells of the anterior cornua" of the spinal cord at its cervical enlargement.

Etoc-Demazy considers general cerebral edema the fundamental pathological change in this condition, as recorded in his classical thesis "Stupidité."

Whatever its pathology, the treatment of this disorder is fairly well understood and consists of tonics, alteratives and eliminants, overfeeding, baths and open-air exercise and the employment of every safeguard against suicidal and homicidal attempts; and, when convalescence is advancing, encouragement and light pleasurable mental diversion are certainly beneficial in hastening recovery. This we consider a rational therapy which, like "Wisdom, will be justified of all her children."

THE FINSEN METHOD.[1]

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Immediately after the introduction of the Finsen method of treating tuberculous diseases of the skin by exposure to the ultra-violet or chemical rays of the spectrum, there arose upon all sides experiments and suggestions with a view to its improvement.

The first apparatus consisted of hollow glass lenticular bodies, filled with water, or weak solutions of cupric sulphate, or pyoctanin. These huge lenses were supposed to fulfil the double function of concentrating the rays of the sun and of absorbing from among them those rays which produced much heat and little chemical action.

It was soon discovered that these glass flasks were impervious to the very rays upon which the efficiency of the system depended, and that the quantity of chemical rays ultimately reaching the patient was so small as to threaten the method with practical failure. At the same time it became evident that no dependence could be placed on the sun as a constant performer, the number of cloudy days on which no work could be carried out proving considerable; and that the absorption from the solar spectrum as evidenced by the Frauenhofer bands left a light in which the chemical rays were not predominant. It was also found that colored solutions absorbed the chemical rays in great quantities.

After fully establishing that no glass produced at the time was capable of transmitting the ultra-violet rays in suitable quantity, it was determined to make use only of rock crystal in the construction of the machines used in the Finsen Institut, and of distilled water in the coolers.

The largest obtainable lenses of rock crystal were about 3½ inches in diameter, and those of that size were extremely rare. The available diameter of the lenses (Medical News, September 20, 1902) determines in a great measure the value of the apparatus. The voltaic arc was found to fulfil all the conditions of constancy and high ratio of chemical rays.

Finsen then devised the familiar form of lamp which has been associated with his name and method. It consisted of an arc lamp of fifty ampères capacity, suspended vertically. Around this were disposed four telescopes so arranged as to collect each a portion of the light generated in the arc, and pointed outward and downward, the axis of each telescope lying in a vertical plane forming an angle of 90 degrees with that of the next adjacent. At the proximal end of the telescope was placed a lens whose function was to refract the divergent rays from the arc into a parallel pencil within the barrel of the telescope where there was a quantity of distilled water through which the light passed, and in which most of the heat radiation was absorbed. At the distal end was a system of lenses which caused the rays to again converge into a focal point of about one-half inch diameter, and at a distance of three inches from the end of the telescope.

In this lamp there were inherent many defects of principle; chief among which were the great distance of the condensing or collecting lenses from the arc, rendering the amount of light utilized in each telescope very small; great length of telescope, with long air spaces; and faulty disposition of the axes of the telescopes, failing to collect the light at the angle of greatest intensity.

This was, however, the first practical lamp, and with it the method was initiated. There was manifested on every hand a disposition to criticize the imperfections in the Finsen apparatus and to substitute other designs, which were alleged to possess features of superiority over the original.

The necessarily great duration of the treatments, one and one-quarter hours, and the cost of installation and current were the cause of much adverse comment. Most of the new apparatus suggested was for the purpose of so economizing the energy by superior physical design that much smaller lamps could be used, and at the same time the result be obtained in shorter periods of exposure.

Among the more noticeable of the improvements was the lamp invented by Sophus Bang, then an assistant in the Finsen Institut. The original contained a small arc of three ampères capacity maximum, supplied with iron electrodes. The smallness of the light was compensated for in the nearness of the arc to the surface to be treated, and in the simplicity of the optical system, which consisted of a single quartz disk.

[1] Read before the Clinical Society of the New York Polyclinic, October 3, 1904.

The elimination of heat was effected by the ingenious expedient of rendering the electrodes hollow and causing to flow within them a stream of cold water. In this way a light that was quite cold was obtained. This lamp produces a cutaneous reaction in fifteen minutes. The quartz disk was used as a compressor by being applied with force to the skin, thus reducing the armamentarium to its simplest dimensions. The selection of iron for the electrodes resulted from the fact that the spectrum of iron contains lines further up in the ultra-violet than that of any other commercially obtainable substance.[1]

The Bang lamp was the type of numerous others, principally the Kjeldsen and the Dermo.

Another type was that invented by Lortet & Genoud and variously imitated by Foveau de Courmelles and others, in England and in this country. This consisted of an arc of 15 ampères capacity, having the carbons set at an angle of 90 degrees and placed behind a double metallic shield, between the layers of which circulated cold water. Each layer of the shield contained a small window in the center, completing that part of the water bath. The arc was placed directly behind the posterior window. The advantages claimed for this lamp were that the proximity of the light to the area to be treated rendered larger capacity needless, lightness and elimination of the difficulty and expense of procuring large rock crystal lenses. The outer disk was pressed against the lesion, thus serving the office of compressor.

Perhaps the most important of all these modified lamps was the spark-gap lamp suggested by Goerl and perfected by Professor Piffard. This, in the latter form, consists of a holder of vulcanite on which are mounted small iron spheres between which are air spaces. The two outermost of these are connected with the terminals of a capacity which is in communication with a static machine or coil. When the latter is operated a continuous stream of brilliant discharges takes place between the iron spheres emitting an intense light with little heating and possessing what is probably the greatest known photochemical action. In front of the spark-gaps is placed a rock crystal disk which, when pressed against the lesion, furnishes the required compression. This lamp gives a reaction in a shorter time than any other, ten minutes or less, sufficing in most cases, to cause a dermatitis.

I omit descriptions of many ludicrous machines produced in this country. Suffice to say that any machine employing glass in any part through which the rays are obliged to pass, is faulty in theory, for notwithstanding the statements of the makers to the contrary, there is no known formula for glass that will transmit the ultra-violet rays in quantities practical for utilization in photo-therapeutic practice. The so-called ultra-violet vacuum tubes to be found in the catalogues of many makers are the fruit of ignorant hypothesis and not worthy of serious consideration.

With all these methods of reducing the cost and duration of the treatment, and of increasing the efficiency of the apparatus and treatment generally, it is remarkable that the Finsen method has steadily declined in the amount of attention attracted to it in different countries. From having been heralded as the most remarkable and important medical discovery of the age, it has gradually fallen into disuse until, to-day, there are many erstwhile enthusiasts who are ready to admit that they have failed and abandoned the method.

In a recent trip abroad, I had the opportunity of seeing much of the work that was done at the Lysinstitut at Copenhagen. What I saw there has given me an entirely new view of the whole Finsen method, and explained to a great extent the cause of its decline in other countries. Here alone of all the countries where it has been tested, have they never lost sight of the primal reason for which it was invented. The original idea, to cure lupus vulgaris by means of the chemical rays of light, has been steadily adhered to, and the result is that they have achieved a success that is certainly remarkable. The number of cases in which they fail is negligible, and may be confined to those of long standing where the skin is impaired beyond regeneration.

The treatment has been continued with the faith, not of the fanatic, but of the scientific logician who recognizes no difference between theory and practice, where the theory is sound.

In my estimation, the reason why interest has been lost in the Finsen method outside of Denmark is to be found in the fact that the host of those who have taken it up have been ill prepared to grasp a subject whose accurate understanding required a knowledge of the physics of optics and electricity. With such a knowledge many of the ridiculous errors in designing apparatus would never have been made. In the constant endeavor to simplify the apparatus, the method has departed far from the original principle.

At the Finsen Institut constant efforts were made to simplify the apparatus, but nothing was accepted without having proven, in fact as well as in hypothesis, its superiority. The reason for their success is that they retained the old imperfect apparatus which, by the way, had demonstrated that if given time it would do the work, instead of accepting on the word of the enthusiast every little toy that was heralded as better than the original.

Much skepticism and lost interest in the method is due to the misguided desires on the part of the ignorant to invade all fields with the

[1] The least wave length of any iron line is 2983.640 and the intensity is 0000 N (Rowland). The shortest line of any appreciable intensity is the 2990.523 line with an intensity of 1. From there to the 3047.725 line, whose intensity is 20 N, and which is the most important iron line in that part of the spectrum, the iron lines are numerous and vary in brightness from 000 to 4 or 5 and even 10 in the 3037.510 line. There are other shorter wave lengths of other substances, but they are of lesser intensity.

light. At the outset, the too well-known tendency on the part of some persons manifested itself in the premature publication of pure hypotheses having no basis in experiment, and not even the substructure of sound physical theory. The lay press has fostered this tendency in its quest for sensation, and the result is that much of what was promised for the sunlight panacea has not materialized, and the interested spectators of the outcome are disappointed and inclined to regard the whole as a failure.

At the Finsen Institut there has been no wild speculation as to fabulous cures. The abstruse education and knowledge of the director forbade any fanaticism. The treatment was originally invented for the cure of lupus vulgaris, and that fact has never been forgotten. At the Finsen Institut there has been more experimenting on different diseases than anywhere else in the world, but nothing was claimed until it was absolutely proven. At the same time a lot of futile experiment was saved by the fact that the man in charge was fully familiar with the principles of the science.

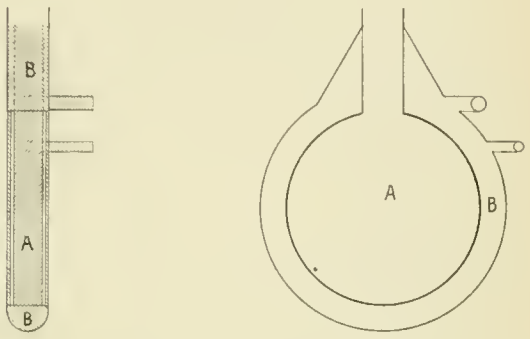
The Institut at Copenhagen has been the scene of incessant research on the subject of the improvement of apparatus. Every logical type of lamp suggested elsewhere was carefully tested and rejected only after proving inefficient.

At present there are two lamps used at Copenhagen, which are unquestionably efficient and possess all the advantages of economy and celerity consistant with the physical limitations represented by material obtainable. These are the Finsen and the newer Finsen-Reyn lamps. The former is to be preferred in institutes and hospitals where a large number of cases are treated, and the latter, where the number is small.[1] The principle upon which these machines is based is that no known glass is capable of replacing the rock crystal for transmitting the chemical rays, and that therefore every economical machine must be no larger than the size of the quartz lenses obtainable warrants.

Experiment has demonstrated that at an angle of 56 degrees to the axis of the positive carbon, the rays are more abundantly distributed than at any other at which they may be conveniently collected.[2] In both lamps the optical systems are arranged at this angle. The Finsen-Reyn possesses some latitude of adjustment in the barrel, useful in the smaller lamp.

The larger lamp consists of a 50-ampère arc, with four telescopic tubes containing optical systems, as already described. The improvements consist in having the tubes inclined at the angle of greatest intensity of the rays, and in having the condensing lenses as near the arc as their diameters will permit. The cooling apparatus is improved and merits description. The outer component of the condenser consists of a hollow disk-shaped chamber of rock crystal. (Fig. 1.)

Fig. 1.

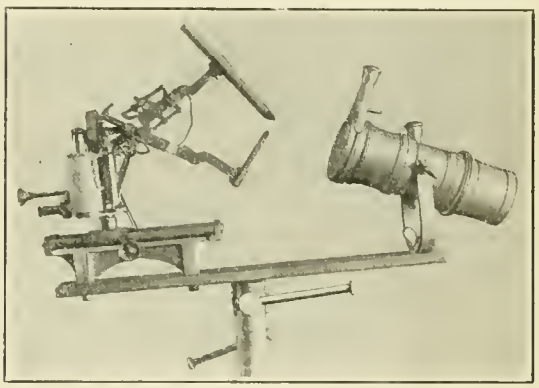


Details of Cooling Chamber.

Water is contained within (A, Fig. 1), which does not circulate. Around the edge of the chamber (b, Fig. 1), running water absorbs the heat from the still water. In this manner, flowing water in the path of the rays is eliminated. An important consideration, as demonstrated by experiment.

I give a brief description of the Finsen-Reyn lamp (Fig. 2), one of which I have secured from

Fig. 2.



Finsen-Reyn Lamp.

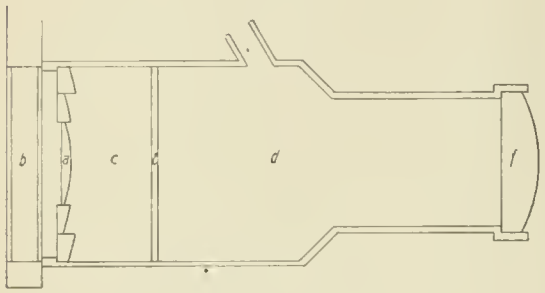
Copenhagen, it being of interest to practitioners in this country, where lupus cases are not numerous. Its small size, high efficiency and low current consumption recommend it. This consists of an adjustable iron base upon which is mounted an optical table about 22 inches long. At one end of this is an arc of 25 ampères capacity. This is fully adjustable and automatic. The carbons are inclined to each other at an angle of 120 degrees, the upper forming an angle of about 56 degrees, with the optical system (Fig. 3) mounted at the other end of the table. This is a barrel 10 inches long, mounted on trunnions in a swivel, and containing the lenses and

1 The ratio of efficiency is greater in the smaller lamp than in the larger (about twice greater, for with a current of 25 ampères, the effect is equal to that in the larger machine in each telescope with 50 ampères, but the total economy of the larger machine with four tubes, is twice greater than that of the smaller with but one).

2 This is not the best angle intrinsically, but the best at which the rays can be collected in a practical lamp.

cooling apparatus. The condenser is guarded by a cooling chamber similar to that of the large Finsen lamp (*b*, Fig. 3), the thickness of the layer of water being three-quarter inch. The

Fig. 3.



Plan of Barrel.

condenser (*a*, Fig. 3) is composed of concentric sections of rock crystal cemented together. Each section has a different focal length, thus securing a greater critical angle and collecting more light than would be possible with a simple lens. Between this and the large chamber is an air space (*c*) two inches long. The large cooling chamber (*d*) is six inches in length. The water in this is not changed during treatment. At the initial end of this chamber is a flat disk of rock crystal (*e*), and at the distal end is a convex lens (*f*), which brings the rays to a focus at 2½ inches from the instrument. All the lenses and disks are of rock crystal, and have a clear aperture of 3¼ inches. The light is delivered by this machine at a temperature of 110° F., and is further cooled in the circulation of a compresser of the ordinary type.

The objection is offered at the Finsen Institut that all forms of lamp employing high tension sparks and iron arcs give only a violent superficial reaction of such severity that the treatment must be discontinued after a short time. The light from these does not penetrate, and when the surface burn heals, the nodules are far from cured. This accounts in a great measure for the numerous recurrences that have been observed in cases supposed to have been cured by the X-ray and iron and spark lamps. It is certain that a material period of time is absolutely essential in the treatment, and that any attempt to curtail this results only in violently affecting the upper structures at the expense of those deeper. The successful practice of the method requires a slow, even, effect gotten through a great depth of tissue. Nature requires a measured length of time to react to the stimulus of the rays, and this cannot be shortened.

Of the modified lamps, that due to Professor Piffard is, as has been already stated, the most important and successful. But the results have been almost altogether in cases of lupus erythematosus and other superficial conditions. In fact, it may be said that for lupus erythematosus, the results obtained by this form of apparatus are far superior to those obtained by the Finsen lamp, and the recent discovery of a new form of radiation in his lamp by Dr. Piffard, may lead to further development along these lines.

In conclusion, I think that the Finsen method when properly practised, and this necessitates the employment of suitable apparatus free from glass and of sufficient power, is superior to all known procedures for the treatment of lupus vulgaris. This opinion is the result of a close observation of the results obtained at the only place where the method has been properly employed. The use of the X-ray has been too limited to warrant the positive assertion that it is a specific in lupus. The cases that have been positively cured by the Finsen method are almost without number, while those cured by the X-ray are few and scattered, and their authenticity shrouded in uncertainty. It may be that we shall finally find a valuable therapeutic agent in the high-frequency currents, but in the meantime we have the ultra-violet treatment of Finsen.

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THE ANTISEPTIC TREATMENT OF THE PUERPERAL WOMAN.[1]

BY LOUIS KOLIPINSKI, M.D.,
OF WASHINGTON, D. C.

Ars summa, materiâ optimâ melior. Quintilian.

The woman delivered of the new-born child is a surgical subject, the victim of wounds of the contused and lacerated varieties of the uterine cervix, the vagina and its outlet. They may be extensive, they may be slight, they are always present. These injuries, when not protected by art, are the chief cause of puerperal infection, septic, puerperal or childbed fever. This fever with a misinterpreted, voluminous and controversial record has of late years diminished much in mortality, but, as some say, not in morbidity, due to anomalous methods of prevention and treatment. In principle these methods are more or less correct, namely the existence or maintenance of the state of local asepsis. This condition is achieved in part by the protective power of nature over the woman, the acid state of the vagina, in the sterile lochial discharges expelling minute organisms or yielding but a barren soil for growth, and is further secured by the antepartum cleansing of the patient, local and general, by the cleanliness of the nurse, by the attention to the clothing, the person, the hands and the instruments of the obstetrician. Further the injuries are to be kept germ-free postpartum by a cleansing of the external genitals, by a single vaginal douching to remove blood and clots, by the use of vulvar pads or lochial guards, frequently replaced, and by an occlusive dressing. This much and so far, in the opinion of the writer, is not enough. The fact remains that a superficial torn wound of this or any other

[1] Read at the Therapeutic Society of the District of Columbia, October 8, 1904.

part of the human body requires surgical treatment, which is in its action both curative and preventive of any other pathological process. One of the best, in thoroughness and efficiency, is irrigation, which embodies the essential act of drainage.

Douching the vagina is a form of this. It has been extensively tried on the lying-in woman and has been generally abandoned as both inefficient and harmful, productive of the very complication it was intended to keep away, and increasing the death-rates of obstetrical hospitals in a marked degree. It has grown to be feared as a maker of mischief almost as evil as when used intra-uterine or as is the curette when septic fever is active. Nevertheless the principle of the occlusive vulvar pad, in theory and collateral experience, has not much to commend itself when the problem of treatment is the prevention of the infection of a wound so prone thereto as is that of the woman just delivered; from its location, position, its anatomical and physiological surroundings.

Again, the minute and exact details of precaution to which the physician subjects himself, the nurse and his implements are very much overdone and overtrusted. A wound that is under the full stream of an antiseptic fluid cannot be infected by the accidental contact of the attendant or an instrument in its ordinary state. The mode and vehicle of contagion is the ordinary and every-day contact and exposure of a wound not protected and preserved, and not the rare and extraordinary modes of inoculation, such as from hands contaminated in the dissecting room or at an autopsy. This insistence on the unusual was perhaps the chief cause of the want of appreciation shown the discovery of the unfortunate and derided Semmelweiss.

In the treatment of a wound by irrigation where tissue is necrosed, half dead or of low vitality, the liquid in its general or local action must not be poisonous and its quantity must be unlimited. Its action must be like the continuous flow of surgical practice. Undoubtedly the unhappy attempts at vaginal douching were and are due to blunders in these fundamental requisites. Such blunders are: First, the use of corrosive sublimate, of carbolic acid or of some of its pseudo-scientific substitutes, and, second, expending a very limited supply.

The writer has used antiseptic douching in normal puerperal cases, and the effects are found to be in every way satisfactory, both in the feeling of general comfort to the patient and in the avoidance of septic fever or its speedy destruction. He has followed the rule that it is better to flush with too much rather than with too little, and accordingly the method consists in washing out the vagina, the cervix, and the vulva, the patient being in the proper position, with a gallon of a solution of boric acid in boiled tepid water, made in the proportion of a heaping teaspoonful (1½ drams) of the powdered acid to the pint. This is repeated three times a day for the first week and then discontinued altogether. Septic fever has not been found to appear in any normal case, and the patients are very well satisfied, particularly so when the purpose of the douching is explained in the beginning. The antiseptic vulvar pad is dispensed with or its use left to the discretion or wish of the nurse or patient.

Boric acid is the most suitable antiseptic, as it has none of the objectionable side effects of other therapeutic bodies of its kind. Its superior suitability can be admitted without argument, and it is the active agent in a number of much used and much advertised nostrums of the "ethical" kind.

To achieve a satisfactory afebrile course in a lying-in woman, barring, of course, the normal rise of one degree and a fraction, three douches a day are sufficient. Two will be found to answer one's ordinary expectations, but four repetitions are not too often, and make the result all the more sure.

To conclude, the writer would wish the much-blamed, much-mistrusted antiseptic vaginal douche in the puerperium not to be completely damned on its past record, but to be used with confidence, by those so inclined, in the way here described, after the manner of a prolonged irrigation and in a quantity neither scant nor limited.

It is a very doubtful statement to maintain that in the obstetrical or in any other practical medical art, nature should be entrusted in civilized life with the care of the patient to keep her free from fever, as nature is unfortunately much more often the cause of fever than is man.

CEREBRAL PALSIES IN CHILDREN.[1]

BY J. M. AIKIN, M.D.,
OF OMAHA, NEB.

THE palsies of children naturally fall into one of two types, clinically known as cerebral and spinal. We see them as hemiplegias, diplegias and paraplegias. The spinal type is so well known clinically and pathologically that I will not refer to it except for differential diagnosis from the cerebral type.

The seat of the lesion in the cerebral palsies of children, as in the adult, is in the brain. It is in the central motor neurons, and in the part of the brain that connects the cortex to the spinal anterior horns. Dana very aptly names these tracts corticospinal neurons and reserves the name neurospinal neurons for the parts degenerated in the simple spinal palsies of childhood. Statistics are not available for accuracy of statement on the relative frequency of cerebral palsies in childhood and adult life. The frequency of cerebral as compared to spinal palsies in childhood, however, is about equal. Our best reports give relatively as large a ratio of cerebral palsies in childhood as in adult life. At first thought

[1] Read before the Omaha (Douglas County) Medical Society, at Omaha, Neb., Sept. 27, 1904.

this statement may seem wide of the truth, but analysis of the etiological factors will, I think, relieve all doubts.

Cerebral palsies in childhood are resultant to prenatal defects, birth accidents and postnatal causes. The vast majority occur during the first three years of life. About one third are congenital in origin; that is, the child is born with cerebral defects, with a lessened number of cortical cells and pyramidal fibers than a physiologically developed child should possess as a basis on which to commence its extra-uterine growth. These are unfinished children, mainly because their progenitors were deficient in vital force. The most common birth accident is prolonged labor. Cerebral palsies from this cause are more frequent in the younger children of a family and from a young wife whose aged husband can impart only the dregs of manhood to his offspring.

In such children the life current is impoverished, the vascular system has less resistive powers, and hemorrhage into the meninges is coincident with, or follows soon after birth. The pathology is not particularly characteristic. It is the clinical sign and its course which make this an independent disease. Pushing the parietal bones against each other is said to cause a compression of the longitudinal sinus, by which the entrance of blood into the veins is made difficult and arterial congestion favored. Forceps delivery is blamed, but it would seem, unjustly, for it appears to be not so much the use of the instruments that is responsible as the factors which render their use necessary. The injuries by accident at birth are to the vessels of the meninges causing lesions over the motor zone of the cortex. Of the postnatal etiological factors, scarlet fever with nephritis, measles and pneumonia with endocarditis and embolism and whooping-cough are common causes of vascular lesions preceding cerebral palsies. Although the motor zone is the initial point of the cerebral attack, the process is diffuse, involving intelligence and the special senses.

Symptoms.—An initial period of fever and convulsions extending over several days, or even weeks, is early followed by motor paresis or paralysis involving one-half of the body, and an upper or a lower extremity. In the infant and young child a lessened though not abolished motor power is apt to be overlooked by physician and nurse until the child has so far recovered from the acute attack as to make efforts at voluntary muscular movements. Even then, impaired motor function and awkward movements are attributed to a simple weakness common to the convalescent period following any acute febrile attack. If convulsions were a constant initial factor, cerebral palsies would not so frequently be mistaken for spinal palsies. Contrary to our belief of former years, more accurate clinical observation has shown that more than one half of the corticospinal neuron lesions are unattended by convulsions as an early symptom; wheras not a few of the neurospinal palsies are preceded or accompanied by them. Within a few weeks after development of the paralysis, improvement will be seen, first in the face, then in the leg, and last and least in the arm. Encouraged by this we too often venture a prognosis that the child will outgrow it all. Up to this stage of progress a period of two to six weeks had elapsed and the points for differential diagnosis from the spinal palsy are just developing. If three or four days are sometimes necessary to differentiate the exanthematous diseases, or a continuous fever, a period corresponding to as many weeks is frequently necessary for deciding between a cerebral and a spinal palsy of childhood. Early after the paralysis is established spasticity of the muscles and exaggerated tendon reflexes develop. To the careless observer, spasticity of the muscles may be looked upon as a tremor due to weakness; this condition of spastic movement in the muscles diverts us from detection of an increased tendon reflex. Some but not decided muscular wasting and contractions are to be seen in the affected limbs, developing later into permanent contractions. Choreic and athetoid movements are a common occurrence. In the spinal type, paralysis is followed by flaccidity of the muscles, diminished or lost tendon reflex, marked atrophy of the muscles and entire absence of purposeless muscular movements. In the cerebral type the mental condition is disturbed. It is usually backward in development, the degree of mental defect ranging all the way from feeble-mindedness to imbecility and even complete idiocy. The development of peculiar moral traits associated with low degree of intelligence distinguish these children among their associates. Approximately one in four have a fair degree of intelligence, but a larger number are slow in learning to talk. In a very small per cent. of cerebral palsies those in which the face and arms are not paralyzed or only slightly, where both legs are involved, the intelligence is not impaired. As the child grows older improvement in the use of the legs occurs, but spasms of the flexors and adductors cause the legs to cross each other in attempts at walking.

This form of cerebral palsies in childhood is sometimes known as Little's disease. In the cerebral palsies the muscle reaction to the electrical current is normal. In the spinal type degenerative reactions are present. Palsies which are congenital, not attended by difficult labor and where there have not been convulsions or other serious phenomena after birth, are most likely due to true porencephalus. Palsies occurring during the first thirty-six months following birth are commonly due to cerebral hemorrhage, embolism or thrombosis. Of these, hemorrhage takes first place, embolism second, with thrombosis as a factor not yet clearly established. A case of cerebral hemorrhage in a two

months old child, on whom I did a post-mortem about twelve years since, verified our clinical diagnosis of a truth not at that time generally accepted by the profession, namely, that cerebral hemorrhage does occur, and frequently too, in children. I had attended the mother when this child was born; she was an alcoholic and morphine narcomaniac. The confinement was normal, labor lasting about three hours. The babe was full term and apparently healthy. It was wholly a bottle-fed child. A brief febrile attack with digestive disturbance was followed two days later by local muscular twitching on right side of face and right arm. These spasms were variable in degree, but increasing in severity and extent until, twenty-four hours after, right hemiplegia was established, death ensuing one week subsequent to the initial febrile stage. The autopsy revealed a hemorrhage of the left middle cerebral artery. Heredity doubtless had a large part in giving that child degenerate arteries. "We are just as old as our arteries."

Course and Prognosis.—The cause is chronic in both types and cure is scarcely possible. In the cerebral type mental defect exists in more than 90 per cent. of the cases. Epilepsy develops in one-fourth to one-half of all, and athetosis or some purposeless movements are commonly present.

In the spinal form mental impairment does not follow, nor do convulsions return after the initial stage. Differentiation of a cerebral from a spinal palsy in children is not easy at the onset, but when weeks pass into months, the numerous points of distinction are too clear to admit of an error in diagnosis. When the diagnosis is clear, we should unhesitatingly advise the parents or guardians regarding the prognosis. It is not enough to say that the impaired motor power will never be fully restored; we should clearly indicate the mental defect so likely to appear in the cerebral type, before allowing a devoted parent to spend money for need of which other members of his family are suffering, in a futile attempt at educating a defective and degenerating brain to the degree of earning a living by his intellect. In a simple spinal palsy the possibilities for receiving mental training are on a par with other healthy children of even age, the spinal palsy *per se* is no barrier to intellectual culture.

MEDICAL PROGRESS.

SURGERY.

Use of the Segmented Ring in Gastric and Intestinal Anastomosis.—The use of the segmented ring in gastric and intestinal anastomosis, as described in 1902 by Francis B. Harrington, of Boston, received such favorable encouragement from the profession during the past two years that reports have been made of personal cases to date, together with the results of a series of experiments upon animals, showing the process of repair. The ring, as described by FRANCIS B. HARRINGTON (*Annals of Surgery*, November, 1904) is made of hard aluminum in four sections, the sections being joined together by a small bar of steel, which has a shoulder and screw-thread serving as a handle. The outer surfaces of the ring are grooved to hold the ends of the intestines, which are tied in place by catgut purse-string sutures. The segments fit together by means of sliding tongue and groove joints, so rounded that they will not cut or catch in the tissues. The ring is made in three sizes, the middle size being best adapted for general use. The smallest size is well adapted for children and for cholecystenterostomy. The objects of the ring are to mechanically assist in the rapid and safe anastomosis of the intestines and to make the contrivance collapsible into such small pieces that subsequent passage through the intestines would be devoid of all danger and pain.

End to End Anastomosis.—Clamps are applied in the usual manner a few inches from the field of operation, and a gather stitch of No. 2 plain catgut is placed on either side of the area to be resected FRANCIS B. HARRINGTON (*Annals of Surgery*, November, 1904). This stitch circles the intestine with bites deep enough into the muscular coat to insure its not slipping, and in order to save time later, the catgut is lightly tied with one-half of a surgeon's knot without drawing the purse-strings tight. The bowel is next cut away up to one-eighth of an inch from the gather stitches because a wide margin forms a wide inturn and a correspondingly thick scar. The weak point in mechanical aids is the difficulty in obtaining a secure joint at the mesenteric border, which danger is avoided with the ring, by putting in a mattress stitch at this spot. This stitch includes a portion of the mesentery on each side, but is not tied at once. The ring is now introduced and one gather stitch tied. The mattress stitch is next tied, followed by the tying of the second gather stitch. The cut bowels now lie smoothly end to end, and by use of the handle can be easily moved about in convenient positions for sewing. The main stay of the suture is a Cushing's continuous stitch which penetrates the bowel into muscularis mucosæ. This starts just to one side of the steel handle and passes around the intestine with frequent knots until it reaches the handle again from the other side. The handle is now unscrewed, leaving the ring held together by the purse-strings, and the suture continued over the hole just occupied by the handle. The cut edges of the mesentery are caught together by a few interrupted stitches. The gather stitch consists of two parallel arms crossing at one end; these arms are just wide enough apart to allow room for incision. The mattress stitch is omitted here, and a continuous stitch is employed to approximate the serous coats and form the anastomoses. The results obtained both practically and experimentally have been most encouraging.

Foreign Bodies in the Vermiform Appendix.—L. J. MITCHELL (*Med. Rec.*, December 10, 1904) gives a list of true foreign bodies found in the appendix during his service as Coroner's Physician, with 1,600 autopsies. One or more grape seeds were present in eight cases, one or more shot in three cases, and fragments of bone in two cases. Other objects were a portion of a shingle nail, a globule of solder, a piece of nutshell, a portion of the vertebral column of a small fish, and fragments, apparently, of ash or stone. None of the appendices containing these bodies showed any igns of inflammation either past or present.

Resection of the Epididymis for Tuberculosis.—From data at present available and also from 12 cases treated by himself, W. Bogoljuboff (*Archiv f. klin. Chir.*, Vol. 74, No. 2) concludes that these are not yet numerous enough to compare the results of this operation with castration. Removal of the tuberculous epididymis is followed in a large percentage of cases by the cure of the process in the testis and recurrences in the testis are not common. Partial resections of the epididymis are attended apparently by a less favorable prognosis as regards the cure of the process in the testis or the epididymis, than the complete resection. Removal of the tuberculous focus in the testis together with resection of the epididymis, not uncommonly leads to a cure of the process in the testis itself. The testis, although deprived of its epididymis, can retain its gross normal relations for a long time. Involvement of the other testis does not apparently occur any oftener where the resection of the tuberculous epididymis is done, than in those cases where no operation has been done. Bilateral, as well as unilateral resection of the epididymis in certain cases may also exert a favorable influence on a tuberculous process in the prostate or seminal vesicles. A tuberculous process existing at the same time in the lungs, may also be affected in a similar manner. The ability to indulge in coitus is retained after either one of these operations. The author finally observed that the production of an anastomosis, by operation, when resection of the epididymis was done, did not unfavorably affect the prognosis of the latter.

High Position of the Scapule.—The various forms of high scapular posture are met with quite often, and familiarity with them may save both the physician and the patient many a trouble. A. A. Vorobyoff (*Roussky Vrach*, No. 35, 1904) cites two cases, in one of which the deformity was of an hysterical origin but so stubborn that the patient, otherwise a perfectly healthy man, was freed from military service after three and a half months of close observation in a hospital. While under chloroform the deformity could be reduced until both shoulders appeared perfectly normal. But even during the process of waking up from narcosis the scapulæ and the shoulder-joint gradually slipped back into their former position. In the second case the deformity was due to a congenital torticollis in which an operation performed some years ago, placed the head in a normal posture but failed in any way to influence the position of the scapulæ. The shortening of the left sternocleidomastoid muscle, its influence on the function of the clavicle and the entire half of the shoulder-joint became clear from the history of the disease. Such cases are not rare, as it is a well-known fact that at a certain stage of torticollis the scapulæ, as well as the entire shoulder of the affected side, takes in a higher position, at times even touching the corresponding ear. The author draws the following conclusions: (1) High position of the scapulæ as an independent affection and may be either acquired or congenital. (2) The congenital variety, as described by Sprengel, depends principally on bony changes of the scapulæ or alterations in the muscles inserted into it. Kaush has demonstrated the importance of the lower portion of the trapezoid muscle in the etiology of this affection. (3) The acquired forms depend on rachitic changes in the bone of the scapula itself. The first case described by the author belongs to the acquired type in which the affection of the muscles was due to muscular dystrophy. (4) Cases of congenital or acquired high position of the scapulæ in which its position is to be ascribed to causes not to be detected in the bone itself or in the neighboring muscles, should be strictly distinguished from the variety of Sprengel and from similar affections.

Anesthetic Effects of Methyl Oxide, Ethyl Chloride and Somnoform.—It is self-evident that our present anesthetics are not, by any means, satisfactory and that we should, as soon as possible, reach some definite conclusion as to the value of these newer substitutes for chloroform and ether. F. W. Hewitt (*Lancet*, November 26, 1904) concludes, (1) as to methyl oxide that when it is largely diluted with air, the mixture, which is not unpleasant to intake, rarely produces satisfactory anesthesia. Mixtures sufficiently concentrated to give such anesthesia are too pungent to be pleasant. As compared to the anesthesia obtainable by ordinary methods, that produced by methyl oxide is of a light type, although it is not infrequently followed by nausea and other distressing symptoms. In other words, although a long administration may lead to a long anesthesia, unpleasant after-effects are apt to follow. Analgesia is often difficult to produce to a satisfactory degree. Danger, however, is almost unknown in the use of this drug. Ethyl chloride, under certain conditions may be a very useful anesthetic. It is a fairly good substitute for nitrous oxide, but it is unquestionably somewhat uncertain in its action, depending apparently upon the reaction of the patient to the drug, a factor which cannot be determined until after it has been administered. Its chief drawback lies in the frequency with which it produces bad after-effects, headache, nausea, vomiting and a miserable sensation of depression. These are apt to be very characteristic and almost typically significant of even a moderate dose of the chloride. A feeling of heat is not uncommon. Speech disturbances are less common than with nitrous oxide, although micturition seems a trifle more common under the chloride. It is distinctly inferior to nitrous oxide and oxygen for short operations, such as dental work, although its portability and simplicity of administration constitute important advantages. The continuous administration without deep breathing of percentage mixtures of ethyl chloride and air, does not produce the best type of anesthesia. By adding nitrous oxide to ethyl chloride a very deep form of anesthesia is induced with extraordinary rapidity, the method having the advantage of destroying consciousness more pleasantly than ethyl chloride alone. The so-called somnoform does not produce such good effects as pure ethyl chloride and is distinctly more dangerous.

Stricture of the Urethra.—The subject of urethral stricture is not, perhaps, one calculated to excite any great degree of originality, but it has certainly been illustrated by Watson (*Boston Med. and Surg. Jour.*, December 8, 1904) with a wealth of experience. He points out very rationally that urethras cannot be measured according to a certain arbitrary worm, inasmuch as they are not naturally all of one caliber. Nor can the meatus be taken as a guide of the urethral caliber. The average caliber may be said to be 32 French, but there are considerable normal variations, more of them above this figure than below it. The average meatus measures 22. There seems to be a fairly constant relation between the circumference of the flaccid penis, and the caliber of its urethra. Otis found this to be so, that a penis with a circumference of three inches, has a urethra with a caliber of 30 French, and each quarter inch in the increase of the circumference, means a corresponding increase of 2 mm. in caliber. In treatment, he believes that webbing bougies, sterilized in a saturated solution of rock salt, should be used up to 18 or 20 French, and from then on metal sounds. The operation of internal and external urethrotomy is described as used by Dr. Gavin, and said to take "not more than two minutes." For the rest, the orthodox methods are described.

PHYSIOLOGY.

The Proteolytic and Rennetic Functions Belong to the Same Ferment.—The knowledge of the extreme and baffling complexity of the digestive ferments is still further complicated by the discovery that actions which have hitherto been attributed to distinct enzymes, really belong to one and the same ferment. This discovery was made by J. P. PAWLOW and S. W. PARASTSCHUK in a study of the reciprocal relations of the proteolytic and milk-coagulating forments (*Hoppe-Seyler's Zeitch.*, September 22, 1904). The actions of both of these ferments in the various digestive juices follow a parallel course. All those changes that influence the functions of the peptic glands, effect both proteolytic and rennetic processes to an equal degree. Age has the same effect. The gradual elevation of the temperature to 52° causes both ferments to gradually and equally diminish in power, which is entirely lost at 62°. The addition of intestinal juice to pancreatic juice activates both the proteolytic and rennetic functions of the latter to an equal degree. A similar parallel course is seen in the juices obtained from the pyloric portion of the stomach and from the region of the duodemum provided with Brunner's glands. The latent and active conditions of both functions are similarly affected in all the juices examined. Upon these grounds the authors attribute these actions to one ferment. A preparation of rennin which Mencki has examined and which he had found possessed the property of coagulating milk, but not the property of digesting fibrin even when acidulated and diluted ten times, was found by Pawlow to digest fibrin when diluted a hundred times with .2 per cent. hydrochloric acid. What is the significance of the coagulation of milk from the standpoint of digestion? If the presence of rennet in mammals be considered necessary for the digestion of milk in the intestine, its function in other animals and in plants in which rennin is present, would be a very incomprehensible one. What would be the use of rennin in animals and plants, when it never comes in contact with milk? The best answer to this question is that the coagulation of milk is a special and from the standpoint of the experimenter, an accidental expression of a general reaction. This conclusion, which is credited to A. Danilewsky, also regards the coagulation of milk as a complication of the proteid molecule, corresponding to a simplification of the latter by means of pepsin, etc. The curdling of milk is the simplest stage in the long series of syntheses of proteids.

The Use of Reducing Substances in the Study of the Distribution of Poisons and Their Effects in Cellular Activities.—Of eminent practical importance from the standpoint of pharmacology and physiology, are the results obtained by C. A. HERTER (*Hoppe-Seyler's Zeitsch.*, September 22, 1904) in studying the effects of various poisons on the reducing activities of the tissues. The method used has been little applied in these branches of science. It was devised by Ehrlich and consists of the injection of methylene blue into the veins of some animal; in a few minutes, either during the life or shortly after the death of the animal, the methylene blue in the various tissues, depending upon the reducing strength of the latter, is partly or wholly decolorized into its leuco-base. This reduction shows itself in a change in color of the tissue from blue to its natural shade. Some of the tissues remain quite blue. The conditions are very variable and depend upon a number of factors,—as size and species of animal, quantity of substance introduced, condition of the infusion and interval of time between the injection and the examination of the organs. The author studied the effects on the reducing powers of the tissues of various narcotic substances, carbon dioxide and adrenalin, as well as the action of cold. In a normal animal, killed five minutes after the injection of a certain quantity of methylene blue into a vein, the muscles showed little of the dye, the lungs are wholly unstained and the heart, particularly the right side, has a bluish tinge. The liver has its usual color or appears darker than normal, the bile is green and contains both reduced and unreduced dye, the pancreas is stained light blue, and becomes considerably darker in the air. The kidneys are stained quite dark and get darker in the air. The urine is stained a greenish blue. The brain is nearly entirely unstained, as are likewise the suprarenal capsules. With the injection of much larger quantities of methylene blue, the phenomena are quite different. The gray cortex of the brain when exposd to the air, acquires a deep blue color, and the islands of Langerhans are deeply stained, while the rest of the pancreas takes a pale stain. From the fresh organs may be recovered a small amount of the leuco-base, which by means of oxidizing agents, may be transformed into the dye. Only a small part of the coloring matter may be recovered in this way, the greater part remaining in the organs, particularly the liver and bile, as a colorless substance that may be extracted by means of water, but which cannot be changed into the dye by any oxidizing agent. However, hydrochloric acid will transform it into the easily oxidizable leuco-base. One has probably in this case to deal with a transformation product of leucomethylene blue, possibly an acetyl compound of the latter. The author studied the effect of various narcotics of the fatty acid series on the reducing capacity of the organism with reference to methylene blue. The inhalation of ether causes an absence of the dye in the bile and its accumulation in the liver, which fact suggests an inhibition of the biliary secretion; there also occurs a retention of dye in the blood and other organs, as the brain and suprarenal capsules. Chloroform and chloral have the same effects as ether. In poisoning by means of hydrocyanic acid, the brain takes up less methylene blue than the brain of the normal animal. This result, which is quite the opposite to that seen in ether narcosis, is attributed to the diminished affinity of the cerebral cells for methylene blue. This is analogous to the inhibition of the capacity of the brain to take up oxygen, which also occurs in poisoning by hydrocyanic acid. The inhalation of illuminating gas by animals causes the muscles which have been made blue by means of methylene blue, to resume their former color. This result shows that even the moderate and in no way fatal diminution of the oxygen-content of the blood, causes the various organs immediately to satisfy their need for oxygen by the reduction of methylene blue. This is analogous to the reduction of indophenol by the tissues in carbon monoxide poisoning. In order to ascertain the effect of changes in the circulation of the blood upon the reducing activities of the tissues the author injected adrenalin into rabbits which were at the same time receiving methylene blue. As a result the kidneys are nearly or quite unstained. This is ascribed to the effect of adrenalin on the renal vessels. The suprarenals on the other hand take up

more methylene blue than the control animal. This harmonizes with the experience that the suprarenals take up the stain readily if the kidneys are not secreting actively, and *vice versa*, if the kidneys are in active secretion.

PATHOLOGY AND BACTERIOLOGY.

Immunization of Cattle Against Tuberculosis.—That the tubercle bacillus of the turtle is harmless to warm-blooded animals, is the claim made by Friedmann (*Deut. med. Wach.*, November 10, 1904), who reports on a series of experiments undertaken to investigate the possibility of using them as a means of immunizing cattle against the bacilli of Perlsucht. It was found that a single injection of the turtle bacilli produced a degree of immunization sufficient to protect an ox against a dose of Perlsucht bacilli fatal to an untreated animal, and that cattle suffering from Perlsucht are apparently cured by injections of turtle bacilli. The author claims that this method of immunization possesses advantages over others now in use, in that the bacilli employed are perfectly harmless, and that a single injection produces a well-marked degree of immunity. The serum of animals, such as guinea-pigs and cattle, immunized in this way, is strongly protective, and when injected into other animals guards them against otherwise fatal doses of virulent bacilli.

Bacterial Antagonism to Typhoid Bacillus.—A series of highly suggestive researches, which may be of some value in practical medicine, is the discovery by W. D. Frost (*Jour. Infect. Dis.*, November 5, 1904), that mixed cultures of bacteria obtained from the soil and water have a marked antagonism for the typhoid bacillus. This antagonism is displayed when the former are grown in broth and a collodion sac containing the typhoid bacilli is suspended therein. The mixed cultures not merely check the growth of the typhoid germs but kill them. The antagonistic bacteria are widely distributed in nature, and are present in various types of soil and water. The following are examples of these bacteria: *B. vulgatus, B. vulgaris, Ps. fluorescens, Ps. putrida.* Changes in environment, such as temperature, oxygen supply, reaction and amount of dextrose have little or no influence in the production of antagonistic substances. Whenever the environment is such that a good growth occurs, the antagonistic substances are apparently always produced. The energy with which they act depends on temperature. At 38° C. their action is pronounced. At the temperature 10-12° the typhoid germ may be grown in the by-products of the other organisms. The antagonistic substances are thermostable—they withstand a temperature of 120° C. for ten minutes. The cause of the antagonism is not due to an exhausted food supply, action of proteolytic enzymes, specific enzymes or the production of hydroxyl-ions simply.

The Action of Microbes on Foreign Toxins.—Closely related to the subject of bacterial antagonism is the subject of the influence which the growth of certain bacteria has upon the poisons produced by other germs. In this instance one may recall the supposed curative influence which the mixed toxins of the *Bacillus prodigiosus* and the *Bacillus erysipelatosus* have upon certain forms of sarcoma, and the antagonism between certain bacteria of the soil and the typhoid bacillus. Although a different phase of this subject, which is evidently pregnant with much that will be of value in medicine, the investigations of M. Garnier and G. Sabaréann (*Arch. de Méd. Exper. et d'Anat. Path.*, September, 1904), have a peculiar interest of their own. It was Metchnikoff who discovered that some microbes, such as the *Bacillus califorme*, reinforce the toxins produced in bouillon cultures of the tetanus bacillus, while the majority of bacteria, such as the *Bacillus mesentericus, Bacillus subtilis*, and the bacillus of symptomatic anthrax, weaken them. Behring found that the diphtheria toxins can be destroyed by certain microbes. The action of microbes on toxins is variable and depends for its effect upon a broth agent and the thing acted upon. The bacillus of Eberth destroys the toxins of diphtheria, but reinforces the tetanic toxins, at least within certain limits of time. The bacillus of symptomatic anthrax destroys the tetanus toxins but reinforces those of diphtheria. The destruction of the tetanic toxins by the bacillus of symptomatic anthrax is due to a distinct action of the micro-organism upon the toxins and not to any substance excreted by the former. As proof of this fact, it is shown that a filtered culture of the bacilli has no effect upon a mortal dose of the tetanus toxins. A mortal dose, however, is rendered completely benign if it is mixed with the bacilli of symptomatic anthrax and kept in contact with them for fourteen hours. Toxins of tetanus which have become aged, or which have been attenuated by simple contact with the air and light or under the influence of the bacillus of symptomatic anthrax, still preserve a certain toxicity in spite of the complete disappearance of the tetanogenic power. They will thus cause wasting and death in a few days in the animal experimented upon. This is a non-specific property of the tetanus toxins, and is comparable to that which Ehrlich attributes to the toxones produced by a transformation of the specific toxins. The secondary action replaces the primary one. It may also be compared to that which takes place in the organism when poisons lose their specific properties, but still give rise to pathological lesions. As an instance of the latter, the author cites the fact that in old cases of syphilis, parasyphilitic lesions appear which are entirely unlike the earlier manifestations of the disease.

Transudates and Exudates.—As the result of observations in a series of 75 cases, distributed among 12 different diseases, J. L. Miller (*Am. Med.*, November 12, 1903) presents the following conclusions: He claims that the color of the fluid, its reaction and the size of the erythrocytes are of little diagnostic value. Nucleo-albumin is usually more abundant in exudates than in transudates, however, many exudates fail to show more than a faint trace. On account of the constancy of the salts present, the specific gravity and the amount of albumin bear an intimate relation. Fluids from different body cavities of the some individual, or fluids of the same origin in different individuals, or successive tappings of the same cavity, may show marked variation in the amount of albumin, probably explained by the permeability of the capillaries, the degree of irritation of the serous surface, the condition of the patient's blood, the tension of the fluid, the amount of absorption taking place, and possibly the blood pressure. Methods of estimating the bulk of albumin, such as Esbach's and Purdy's, are not applicable to serous fluids. Reuss' formula is the most accurate, simple method for determining the amount of albumin in serous fluids. The diagnostic value of the specific gravity, or amount of albumin, is greatly lessened by the frequent presence, simultaneously, of several processes. A hydremia, as a result of anemia or transudation from pressure, may lower the specific gravity of an inflammatory fluid. Secondary inflammation, high tension of the fluid, or resorption taking place, may increase the specific gravity of

a transudate. At present there is absolutely no reliable method of determining the tuberculous character of serous fluid. The specific gravity of a fluid, when taken for several tappings, may be of prognostic value. The predominence of lymphocytes may be associated with a long standing, simple pleuritis, a hydrothorax or a tuberculous pleuritis. The presence of relatively large numbers of neutrophiles in pleuritic fluids, may be associated with an acute, simple, or a secondary tuberculous pleurisy. The presence of numerous cells, chiefly neutrophiles, suggests an acute simple pleuritis. The presence of numerous lymphocytes with few if any neutrophiles, indicates that the process is probably a tuberculous on. In ascitic fluids there is little that is characteristic. Neutrophiles are usually more abundant in fluids due to portal stasis from cirrhosis than in tuberculous peritonitis. An eosinophilia in one body cavity may occur along with a neutrophilia in another. A study of the cellular elements in fluids from the pleural or abdominal cavities, is of comparatively little diagnostic value, either in differentiating transudates from exudates, or in determining the character of the latter.

The Blood in Measles.—A careful study of the leucocytic changes of the blood in measles has been made by W. TILISTON (*Jour. Infect. Dis.*, November 5, 1904), with the following results: During incubation the leucocytosis begins soon after infection, reaches maximum six days before appearance of eruption and lasts into the first part of the period of invasion. During the latter part of the invasion and during the stage of eruption, the white count is normal or is more usually diminished, reaching its lowest point at the height of the rash. Leucocytoses points to complications, but its absence during the eruptive stage does not exclude complications. The onset of leucocytosis with the latter may be preceded by a rise in the percentage of neutrophiles or a failure on their part to decrease at the proper time. The polymorphonuclear leucocytes are increased during the incubation, invasion and eruption and diminished at defervescence. They are normal during convalescence. Myelocytes are present in small numbers during the eruption, especially in young children. The lymphocytes are at first decreased, and increased after the crisis. The large mononuclears and transition cells are normal at first and increase later. The eosins are decreased or absent in eruptive stage and later increase. The mast cells show no changes. The blood plates are decreased during the eruption. The blood is normal at the twelfth day. In doubtful cases the absence of leucocytosis with a decrease of eosins is in favor of measles as against scarlatina and *vice versa*.

Infective Myositis.—On account of the great circulatory distribution of this rather rare disorder, it is of importance because of its extraordinary virulence. JOHN H. ABRAM (*Lancet*, November 12, 1904) states that out of 17 cases of infectious myositis, referred to by Lorenz, seven were known to have died in from four to sixteen days, while in one of the author's two cases, death occurred on the sixth day. In addition to the well-known classification in Lorenz's monograph on muscle diseases, the author adds the following rather unusual form, to wit: Dermatomyositis. This is not unlike trichinosis, save that the etiology is unknown. After rather vague prodromal symptoms, characterized by marked dermal inflammation, the disorder spreads into the subjacent muscular tissue. There is marked enlargement of the spleen and death is apt to be due to involvement of the respiratory functions. Polymyositis, hemorrhagia very similar to the foregoing, but the heart is particularly involved. Neuromyositis. This affection is very closely related to multiple neuritis. Myositis with joint lesions, acute rheumatism and gonorrhea, myositis tuberculosa,—either hematogenous or due to extension. Myositis-syphilitica,—either a diffuse inflammation with skin implication or gumma. Myositis-fibrosa. May occur as a definite disease, probably due to congenital tendencies, but is more commonly a secondary condition. Myositis-ossificans. (*a*) Local variety practically always traumatic in origin; (*b*) myositis-ossificans progressiva. Affecting children and young adults, associated with inflammatory phenomena and due probably to congenital predisposition. In the suppurative varieties of myositis, it has been shown positively that micro-organisms play a large part in the causation of the disease. In the non-suppurative varieties, however, although the etiology is probably a similar one, nevertheless the relation of the germs has not yet been definitely decided. Bruns' list of muscles in infective myositis is: Pectoralis major, deltoid, triceps and biceps, psoas, quadriceps and gastrocnemius. An important differential point between this disease and ordinary muscular rheumatism is that it is usually accompanied by a moderate degree of temperature. Furthermore, on inspection, the muscles or muscle involved may usually be seen to be shortened and swollen, and on palpation, in many cases nodules may be found in the hardened muscular tissue. If the skin is edematous the detection of these nodules may be very difficult or impossible. Pain, as in other inflammatory conditions, is a marked feature and is very much increased on motion. Furthermore as in other syphilitic conditions, this not infrequently is a marked factor in the syphilitic variety where it occurs only at night. Miyake, in 1904, says that the disease is rather common in Japan, 33 cases having come under his observation in twenty-one months. The disease is clinically met with in three forms: The first being a malignant variety which usually kills within a very few days, the second being an acute form in which recovery is probable, and the third, being a mild subacute form from which recovery is altogether probable.

Experimental Changes in the White Cells.—In a previous article J. ARNETH (*Münch. med. Woch.*, November 8, 1904) stated that in almost all infections, the earlier forms of polynuclear leucocytes, that is, those with single or indented nucleus, predominate, while cells with two and three-lobed nuclei are less numerous. In rabbits, the eosinophile cells take the place of the polynuclears, and if the animals be experimentally infected with various germs or toxins, the same nuclear changes may be observed as in man. Where an animal possessed a natural immunity for some specific toxin, as the rabbit for tuberculin, the changes did not occur, even though the leucocytes of man were affected by the same toxin. The nuclein, which is set free when a polymorphonuclear leucocyte breaks down, is probably of the highest importance for combating infection and it is most probably for this reason that the cells ripen more quickly and constantly receive reinforcements from the bone-marrow. If foreign proteid and other poisons were injected instead of bacteria, the same changes were observed. The red cells also suffer severely if a toxin circulates in the system for normoblasts and even megaloblasts were encountered constantly.

Congenital Hypertrophy of the Heart.—An enormous enlargement of the heart was detected at the autopsy of a child, fourteen months old, by E. HEDINGER (*Virchow's Archiv*, Vol. 178, No. 2). Since the valves and all other organs were free from pathological lesion,

the author was forced to assume that the condition was congenital. The child was perfectly well and developed satisfactorily up to the end of the first year. After that, cough appeared, a pronounced anemia of chloratic type developed, and with the first attempts at walking, the heart became insufficient. An explanation of this condition is very difficult. In other similar cases, the heart was supposed to be the seat of a diffuse myoma, but it is more likely that here some circulatory obstruction existed during intra-uterine life, even though most careful search at autopsy was negative.

First Anatomical Changes in Tuberculosis of the Lungs.—It is difficult to determine what pathological lesions initiate a tuberculosis of the lungs, since the changes are already far advanced in most cases which come to autopsy. Thus A. J. Abrikossoff (*Virchow's Archiv*, Vol. 178, No. 2) found only two cases suitable for study in several hundred autopsies. He concludes as follows: Pulmonary phthisis in adults is generally due to a recent infection with tubercle bacilli and not a result of an exacerbation of a latent process acquired during infancy, as is held by so many. In most cases the lungs themselves are the starting-point of the process; in other words, pulmonary tuberculosis is a primary and independent lesion. The disease begins as a rule in the intralobular bronchi of the apex of one lung, in the form of a productive, tuberculous peribronchitis. Owing to loss of elacticity, as a result of caseation of the primary neoplastic tissue, a circumscribed dilatation of the bronchial lumen will follow. The process spreads from its primary sites in different ways. It travels both in centripetal and centrifugal direction along the bronchus and its branches, giving rise to a tuberculous, peribronchial lymphangitis. The neoplastic tissue surrounding the bronchus, may readily break through the bronchial lumen, both at the primarily and secondarily infected sites and the symptoms of a specific tuberculous bronchitis will soon appear. Cheesy bronchitis and peribronchitis of the intralobular bronchus and its immediate branches, are thus the first stage of the tuberculous lesion. The process may also extend to the abjacent tissue, when it generally retains its productive character and presses together the alveoli of the lung. As soon as cheesy masses have ruptured into the bronchus, an aspiration occurs into peripherally situated areas, and several patches of bronchopneumonia will appear, each one of which corresponds to the terminal end of a bronchus. This may be called the second act of the process. Most recent cases examined were in this bronchopneumonia stage with beginning central caseation as far advanced that an idea of the original structure could only be obtained by staining for elastic fibers. The blood-vessels are not rarely affected by a productive process which surrounds them like a belt and goes hand in hand with a proliferation of the intinia. Vessels of larger caliber are, however, free. The elastic fibers are destroyed late and then in a purely mechanical way. The bronchopneumonia distribution of the initial foci may also be seen in hematogenous miliary tuberculosis and in the experimental tuberculosis of animals; it argues, however, strongly in favor of a primary infection of the lungs in most cases. There can be no doubt that bacilli are often inhaled and the fact that they settle so frequently in the apices is best explained by diminished powers of overcoming an infection here. In children the bronchial nodes are generally affected, first, from the respiratory passages and the lungs are involved secondarily. Bronchial tuberculosis of children has a tendency to remain latent for a long period and encapsulation is never perfect, but with adult age the dangers of propagation become less, owing to calcification and proliferation of connective tissue. At this stage, the bacilli are no longer transported to the glands, but to the lung itself. Secondary involvement of the lungs in children is due to rupture of cheesy material through the walls of the bronchus nearest the node or else by extension of the process into the perivascular lymph-channels of the bronchus. The secondary foci within the lungs do not develop in a typical way, like the primary, unless they spread by way of the bronchi.

PRESCRIPTION HINTS.

Delirium Tremens.—In mild attacks the following combination of hypnotics has proven of invaluable service:

℞ Heroin .....gr. ss (.003)
Veronal .....ʒ iss (6.0)
Elix Sod. Bromid.....q.s.ʒ ii (60.0)

ʒ ss q. 3 hours during day; ʒ ii at night.

And as a stomach tonic in the morning,

℞ Ac. nitro. mur., dil.....ʒ i (4.0)
Tr. cinchon. comp.....q. s. ʒ ii (60.0)

ʒ ii before breakfast.

Moist Eczema.—Such weeping surfaces may be lightly dusted over with oxide of zinc powder, or the following may be applied:

℞ Calamine .....ʒ i (4.0)
Ung. oxidi zinci.....ʒ vii (28.0)

Sig. Apply to spot.

Or the calamine may be applied in a lotion, as follows:

℞ Pulv. calaminæ.....ʒ ii (8.0)
Pulv. oxidi zinci.....ʒ ii (8.0)
Alcoholin .....ʒ ss (15.0)
Aq. rosæ..... ....O i (500.0)

Misce. Apply with cotton.

Flatulency.—The following has been useful in flatuleney and gastric fermentation:

℞ Aquæ chloroformi.....f3 viii (240.00)

Sig. Tablespoonful before and after meals.

Used in chronic gastric catarrh:

℞ Acidi salicylici.....gr. xxiv (1.60)
Oleoresinæ capsici.....gtt. vi (.40)
Strychninæ sulphatis.....gr. ss (.032)
Ext. gentianæ.....gr. xxiv (1.60)

Misce. Fiant pilulæ No. xxiv.

Sig. One after meals.

Hemorrhoids.—Used to relieve painful internal piles with prolapse:

℞ Chloretoni .....gr. xxx (2.00)
Orthoformi .....gr. xxxvii (2.50)
Unguenti belladonnæ.....gr. xxx (2.00)
Iodoformi .....gr. xxx (2.00)
Adipis lanæ hydrosi..q.s. ad ʒ vi (25.00)

Misce et fiat unguentum.

Sig. Apply several times a day.

Mammary Inflammation.—Very useful in acute inflammation with tenseness and of pain. Active saline purge at beginning of treatment.

℞ Unguenti belladonnæ..... ....ʒ i (32.00)
Unguenti hydrargyri.....ʒ iv (16.00)
Ichthyoli.....f3 iv (15.00)
Cerati plumbi subacetatis.....ʒ i (32.00)

Misce.

Sig. Apply to breast freely, and employ tight breast-binder.

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A NEW CAPSULAR STAIN.

Among the tasks facing the commission of experts who have undertaken to investigate the cause of the increase of acute respiratory diseases, is that of tracing the conditions of the transmission of the *Diplococcus lanceolatus* from one human being to another. The theory that pneumonia is more or less preventable, rests upon the hypothesis of communicability, and a prerequisite to the demonstration of the mode of communication is the possession of a ready means of differentiating the offending organisms. Biological methods of differentiation have not proven very satisfactory, and the need has been felt of a practical method of morphological identification.

The contribution by Dr. Leo Buerger of a new method for the staining of the capsules of bacteria, promises to be of material assistance in the work above referred to, and is a happy offset to the action of the Civil Service Commission, which, by its ruling prohibiting the employment of non-resident research scholars, threatened materially to impede the progress of the proposed investigation.

By the methods of staining heretofore employed, the encapsulated diplococcus has not been easily and surely distinguished from certain organisms of the streptococcus type. The older stains present the capsule of the diplococcus in the form of a diffusely stained elliptical area immediately surrounding the diplococcus. Dr. Buerger's stain (Medical News, Dec. 10, 1904, page 1117 brings out the capsule in an entirely different manner, presenting a narrow elliptical membrane, deeply stained, which is separated from the diplococcus by a clear interval of capsular substance, which latter area either remains unstained or takes on a faint color.

The type of capsule belonging to the *Diplococcus lanceolatus* is shown by this stain to be entirely different from that characterizing other encapsulated organisms. The method employed appears to depend upon the rapid fixation of the bacteria while still alive and when spread in a medium which prevents dissolution of their capsules.

Dr. Buerger's technical procedure is one of timely interest, and if his method proves as successful in the hands of other workers as in his own, it will undoubtedly be regarded as a distinct improvement upon the methods of staining hitherto in vogue.

MODERN ADVANCES IN ANIMAL ENZYMOLOGY.

Some of the most notable recent advances in the domain of physiological chemistry have reference to the question of enzymology, a chapter which, in animal chemistry at least, was only a few years ago regarded as fairly satisfactorily closed. We had all become acquainted with the ptyalin of the saliva, the pepsin and chymosin of the gastric juice, the trypsin, steapsin and amylopsin of the pancreatic juice, besides the existence of certain indefinite ferments in the enteric juice, the function and origin of which was, however, not very clear. As regards the process of albuminous digestion it was further thought that peptic digestion led to a definite end-product, the amphopeptone of Kühne, in which a hemi- and an anticomplex were still united, while tryptic digestion led to the separation of these groups and the liberation of antipeptone and hemipeptone; the latter, unless directly absorbed, was then supposedly decomposed with the formation of leucin and tyrosin.

In a general way this concept of the process of proteolytic digestion still holds good, but it has been modified and extended in many important particulars. As we have pointed out editorially

some months ago, it has thus been ascertained that Kühne's amphopeptone, as well as his hemipeptone and antipeptone do not represent end-products of proteolytic digestion in the original sense of the term, but that both amphopeptone and antipeptone are mixtures of still simpler products, which in part still give the biuret reaction, while in part they retain none of the original characteristics of the albumins. The existence of a hemipeptone, on the other hand, has thus far only a hypothetical basis. The difference between the process of peptic and tryptic digestion is essentially a quantitative one, in which the element of time plays an important rôle. The end-products are the same and are identical with those which result on hydrolysis of the corresponding albumins by means of acids and alkalies.

The part which pepsin plays during the process of albuminous digestion, has not been materially changed by any of the discoveries of recent years, excepting in so far as the extent of its action is concerned. But in the case of trypsin it has been found that the presence of a special body is necessary before the ferment is capable of exercising its activity. Formerly it was thought that the pancreatic proteolytic ferment existed in the pancreatic cells as an inactive proferment, trypsinogen, which in some manner not definitely understood was transformed into the physiologically active trypsin. It has now been shown that this transformation is effected by a peculiar substance, which has been termed enterokinase, and which apparently belongs to a special class of cellular products, which in themselves are inactive, but are capable of activating certain ferments. Of the mode of action and the chemical nature of enterokinase, we know practically nothing and its origin even has not as yet been definitely ascertained. From the researches of Delezenne, however, it appears that leucocytes (lymphocytes) may be primarily concerned in its production.

Whether or not a kinase is necessary to activate the other digestive ferments of the pancreas also, viz., their proferments, has not been definitely ascertained, but in the case of the fat-splitting ferments at least it seems not improbable.

The secretion of the pancreatic juice was formerly explained upon the basis of a reflex action, in which the acid chyme coming from the stomach represented the stimulus. This conception also has been modified as the result of recent research, for while there is good evidence to show that pancreatic secretion can be reflexly excited, an additional mechanism undoubtedly exists by which the same result can be accomplished. This mechanism depends upon the presence in the circulation of a peculiar body which at first was regarded as a ferment, but which apparently belongs to a special group of products, which have been termed krinins or krinogenic substances, and of which the exponent in the present case is known as secretin. This apparently exists in the epithelial cells of the duodenum and the upper portion of the jejunum and possibly even more widely distributed in the gastro-intestinal canal, in the form of an inactive prosecretin, which is transformed into the active product by contact with dilute acids, etc. It is then absorbed and carried by the blood current to the pancreas, where it exercises its special stimulating activity directly. Of the chemical nature of this substance also we know practically nothing. It is not destroyed by boiling either in acid, alkaline or neutral solution, and can therefore not be an ordinary ferment; is in no way specific of any one animal species, but it appears to be common to and identical in all vertebrates. Whether or not the pancreas is the only digestive gland which is thus stimulated to secretion remains to be seen, but there is some evidence to show that a similar effect can be produced upon the secretion of the bile and the activity of the salivary glands.

To return to our older concept again, it was formerly supposed that the products of gastric and tryptic digestion were reconstructed to native albumins in the gastro-intestinal mucosa, which idea was largely based upon the fact that that "peptones" disappear from their solutions in the presence of particles of intestinal mucous membrane. This observation was placed in a new light by the discovery of Cohnheim that the intestinal mucous membrane contains a proteolytic ferment erepsin, which is capable of hydrolyzing acid albumins and albumoses to the point where the biuret reaction disappears, while it is without effect upon the native albumins. In the experiment mentioned, the "peptones" thus disappear, not because they are reconstructed into albumins by the epithelial cells, but because they are broken down still further. Where and how the reconstruction of the albuminous molecule then takes place after its preliminary cleavage into its ultimate fragments is not known. That it takes place after the epithelial barrier of the gastro-intestinal mucosa has been passed has repeatedly been suggested, but the negative find-

ings in the portal circulation, so far as albumoses and "peptones" are concerned, was regarded as evidence that the process of reconstruction could not occur beyond the intestinal tract. In the light of our present knowledge, however, it is quite conceivable that this may occur nevertheless, but thus far blood analysis for the ultimate products of digestive cleavage has been beset with great difficulties, which, however, are likely before long to fall away. What future studies in this direction will bring is of course impossible to foretell, but it is interesting to note that by the aid of a special method, but recently perfected, encouraging results have already been obtained. So much appears certain in any event that the reconstruction of the albumins takes place through the activity of the body tissues. The question of how of course cannot be definitely answered at the present time; but in view of the rapid progress which is being made in the knowledge of the so-called tissue ferments, and the disclosure of the multitudinous possibilities which here exist, it appears not unlikely that ferment action may also be responsible for albuminous reconstruction. This seems the more likely, as it has been shown that several ferments are capable of reversible action, *i.e.*, both of destruction and of construction.

To enter into a consideration of the intracellular ferments in any detail, however, is out of the question at this place. But it is noteworthy that only seven years ago one of the foremost writers on physiological chemistry in Germany emphatically denied the existence of such ferments. This is the more remarkable as Salkowski had drawn attention to the process of autodigestion of organs some years before, and had insisted that during this process ferments are active which are derived from the tissues themselves. Nevertheless it was maintained that this process, in so far as it could be referable to ferment action at all, was dependent upon what might be termed miscarried gastro-intestinal ferments. The various manifestations of cell life, *i.e.*, the various constructive and destructive changes occurring in the tissues were explained upon the basis of special vital forces, as something distinctive and separate from merely chemical or physical forces. Since that time, however, it has been conclusively demonstrated that not only the phenomena of autolysis, as we see them post mortem in the laboratory, but also many of the catabolic changes occurring during life are referable to fermentation. The ordinary digestive ferments of former days are now very much in the minority, while the tissue ferments are steadily increasing in number. The complexity of ferment action, as we now know it to occur in a single cell, is indeed quite bewildering. In the liver cell, for example, not less than a dozen different ferments have been demonstrated. That the action of some of these is not only destructive, but also constructive, can scarcely be doubted, but as yet our knowledge of ferment action in general is too incomplete to warrant the conclusion that the reversible action which has been demonstrated in some is common to all. Future research in this direction will probably go far to clear up many obscure cellular phenomena, which formerly were attributed to special vital forces.

ECHOES AND NEWS.

NEW YORK.

Appointments at the N. Y. Skin and Cancer Hospital.— Drs. J. Riddle Goffe and Andrew F. Currier have been appointed gynecologists to the above-named hospital, located at Nineteenth Street and Second Avenue. This is the only service in this country exclusively devoted to malignant disease in its preventive, curative and palliative treatment. An open clinic will be held every Tuesday and Friday, from 2 to 4 P.M., when patients will be received. It is especially desired that physicians should recommend and, if possible, accompany their patients.

A Milk Company to Quit.—The milk and cream company whose permit for the sale of its products in New York was recently revoked by the Health Department on account of its insanitary condition, will go out of business, and is now disposing of its stores and property to milk companies which either hold licenses or will apply for them. Dr. Darlington said he thought this was the best move the company could make, as he did not see how he could ever grant them a permit. He said that formaldehyde and coloring matter had been found at the creamery for the adulteration of the milk, and under such circumstances he did not see how the company could guarantee that it would not repeat the practice.

Vanderbilt Ward Open.—Kathleen Vanderbilt, the one-year-old daughter of Mr. and Mrs. Reginald C. Vanderbilt, played the part of Santa Claus, by proxy, to the little sufferers in the Lincoln Hospital, One Hundred and Forty-first Street and the Southern Boulevard, on Christmas morning, when a new ward for children was opened in her name and each one of the inmates got presents from a huge Christmas tree. Recently Mr. Vanderbilt became interested in the institution through the attending surgeon, Dr. Benjamin P. Tilton, and, learning that there was no ward set aside especially for the care of children, decided to establish one. His offer was gratefully accepted, and the Board of Trustees' old room, which is about 50 by 50 was remodeled, at a cost of about $7,000. Twenty beds were put in it.

Columbia Pharmacy Degrees.—The Columbia University Council, at its last meeting, authorized the degree of Graduate in Pharmacy to be conferred, as in the past, by the New York College of Pharmacy at a separate commencement, and provided for the establish-

ment of a course of higher grade leading to the degree of Pharmaceutical Chemist. Candidates for the degree of Pharmaceutical Chemist will be required to pursue a course of study extending over two full academic years. After 1907, the advanced degree of Doctor of Pharmacy, which is now conferred by the College of Pharmacy upon those who hold the degree of Graduate in Pharmacy and who take an advanced course in addition, will be conferred only upon graduates of the advanced course who already hold the degree of Pharmaceutical Chemist.

PHILADELPHIA.

Pathological Society Exhibition.—The annual exhibition meeting of the Pathological Society of Philadelphia will be held on January 11 and 12, 1905, in the Mütter Museum of the College of Physicians. The extension of time will allow of short demonstrations on series of specimens.

Symposium on Food Preservatives.—At the meeting of the Philadelphia County Medical Society, held December 28, Dr. H. W. Wiley, Chief of the Bureau of Chemistry of the United States Department of Agriculture, by invitation gave an address on "Food Preservatives and Food Adulteration." W. W. Smithers, Esq., by invitation, spoke on "Defects in Pennsylvania Food Legislation." Dr. T. L. Coley read a paper on "The Evaluation of Evidence as to the Pharmacologic Action of Food Preservatives."

Street Cars Still Unheated.—The annual talk regarding the Rapid Traction Company because of unheated cars is in progress, and is more pronounced than ever before; the result will probably be the same. Last week there were 76 deaths from pneumonia and many prominent physicians are on record in attributing a proportion of them to the cold cars. Owing to the persistent agitation of the daily papers, mounted policemen have been placed in the most crowded parts of the city to keep the cars moving, but this makes but few minutes difference in time and of course contributes little to the question at issue; it helps traffic which is the only intention.

Merging of Prominent Chemical Firms.—The first of January will mark the merging of two great chemical and drug houses of this city. At that time the manufacturing firms of Powers & Weightman and Rosengarten & Sons, will be united under one supervision. The combination was at the initiative of Mrs. Walker, the daughter and heir of William Weightman. She will be represented in the directorate of the new firm but will take no active part in the management. Business will be conducted as usual at both plants, where nearly one thousand hands are employed. The preparation of morphine and quinine will be almost entirely in the control of the new firm, each of the old ones having a monopoly of one of those drugs.

Effect of Tuberculosis Vaccination Upon Tuberculous Cattle.—At the meeting of the Pathological Society of Philadelphia, held December 22, Drs. Leonard Pearson and S. H. Gilliland, in a paper on this subject, announced experiments which may have an important bearing on the treatment of the disease in question. The experiments began four years ago when from a herd of tuberculous cattle, twelve tuberculous calves were isolated. Of these, six were given injections of tuberculin and human tubercle bacilli and the other six were kept as controls. Some of the calves died and the others were finally killed. Comparison of the lesions showed such difference in favor of the vaccinated animals as to leave essentially no doubt of the beneficial effect of the measures adopted.

Tablet to Dr. Hughes Unveiled.—The bronze mural tablet erected in the Philadelphia Hospital, through subscriptions started by the *Press*, was unveiled on December 27. It is three by six feet in size and is placed in the wall of the main entrance corridor, where it will commemorate Dr. Daniel E. Hughes, who for twelve years was chief resident physician of the institution. He died two years ago from tuberculous peritonitis contracted in the buildings. The tablet bears a life-size bust of Dr. Hughes and the following inscription: "In memory of the self-sacrificing services of Daniel E. Hughes, M.D., Chief Resident Physician of the Philadelphia Hospital from 1890 to 1902. Erected by subscriptions received by the Philadelphia *Press*, from his friends and admirers. Others he helped and saved: himself he spared not. 'A sick man helped by thee shall make thee strong. Thou shalt be served thyself by every sense of service which thou renderest.'"

Improved Health Laws for the State.—At the coming session of the Pennsylvania Legislature will be introduced a bill providing for the reorganization of the public health service of the State. The principal purpose is to prevent the occurrence of epidemics such as happened recently at Butler. The act provides that the State Board shall appoint for each county a practising physician of at least five year's experience to be medical officer of the county; such physicians must have special knowledge of sanitary law and administration. The county courts will name a health officer in each township to serve under the county physician. All these officers will have full power to investigate any thing suspected of being a nuisance, even to pollution of streams, will have authority to make arrests, and may summon witnesses. The idea is to have the state constantly patrolled by a staff of physicians to detect things in any way inimical to the health of the people. The bill has been endorsed by the State Board of Health and by practically all of the medical societies of the State.

CHICAGO.

Smallpox.—Chief Medical Inspector, Dr. Heman Spalding, reports 16 new cases of smallpox sent to the isolation hospital during the week; 15 never had been vaccinated; one had an old, imperfect scar; four were unvaccinated children under the school age. One was an unvaccinated school child in school on a false certificate of vaccination. Four came from the down-town lodging houses. Since January 1, 1904, there have been 323 cases of the disease, of which number 22 died, 251 recovered, and 50 remained in the hospital under treatment.

Children's Hospital Staff.—At a recent meeting of the Board of Directors of the new Children's Memorial Hospital, the following physicians were chosen for the medical staff: Drs. Fernand Henrotin, M. L. Harris, Norman Kerr, J. N. Oswald, Henry G. Anthony, J. W. Class, Hugh T. Patrick, A. M. Hall, Geo. F. Fiske, W. S. Christopher, W. D. Storer, W. W. Quinlan, S. J. Walker, J. P. Houston, and Geo. Chapman. Drs. Frank Billings and Nicholas Senn will act as consulting physicians. A committee of the Board, consisting of Thomas D. Jones, Dr. Samuel J. Walker, E. W. Cramer, W. B. McIlvaine, and James F. Porter has a site for the new building under consideration. Several good pieces of property have been offered, and a selection will soon be made.

Physicians Meet and Plan New County Hospital Staff.—The Commision to nominate members of the County Hospital medical staff met yesterday afternoon, and adopted the report made by its special committee.

It was recommended that a new form of application be printed, so that any physician desiring may apply. It is to be published not later than December 30. Excerpts of the report adopted, with revisions, are: That nervous and mental diseases be established as a separate department of service; that the apportionment of the eclectic and homeopathic members of the staffs in the departments be left to the decision of the representatives of those schools of medicine, and, if they cannot agree, the nominating commission to decide; that all applicants must be citizens of the United States and residents of Cook County for at least five years, and in practice or study for at least five years after graduation; that the following regular departments of service be created, with number of attendants for each as indicated: Surgery, 12; medicine, 12; nervous and mental diseases, 4; diseases of children, 6; obstetrics, 4; skin diseases, 2; diseases of the eye, 2, and diseases of the ear, nose and throat, 2. Seven committees, composed of physicians, were appointed to pass on the applications, one for each department.

Home for Destitute Crippled Children.—The management of this home is making renewed efforts to provide for the necessities of crippled children. Mrs. R. H. McElwee has given the movement a new impetus by donating a dispensary and operating room, but there still remains to be provided, according to present plans, quarters for sixty more unfortunates. The Home accommodates 40, and the plan is for an annex to cost $10,000. In the past year 500 crippled and destitute children have been cared for in the home.

Public Health Conditions.—No material change in public health conditions is indicated by the mortality returns for the week. The death rate continues unusually low for the season. The average December rate between 1893 and 1903 was 15.19 per thousand of population; thus far during the present month (December) the rate has been 13.35, and that for the week is only 13.77, as compared with 15.28 for the corresponding week of last year. The number of deaths from suicide and other forms of violence are the lowest for any week of the year—only a total of 20, as compared with 50 during the previous week, and 51 in the corresponding week a year ago. There is a decrease from the 2,063 hospital patients of the week before to 1,862, although there is a slight increase of pneumonia and typhoid fever cases.

City Lax in Tuberculosis.—"The municipality saves money and spends lives." This is the charge made against the city of Chicago by Samuel Hopkins Adams, who writes on tuberculosis in *McClure's Magazine* for January, 1905. Mr. Adams visited most of the large cities of the country in quest of data concerning the cause, spread and prevention of the great white plague. His investigation in Chicago, he says, demonstrated that the city law-makers have been utterly lax in framing ordinances providing for compulsory registration, whereby the houses occupied by consumptives are reported to the City Hall, and for municipal disinfection and sanitation. "For the type of all that is most inefficient and negligent, we must come back to Chicago," writes Mr. Adams. "Chicago, which in the pride of its civic virtues, stands as the most public-spirited of our great cities! As I have said, there is no compulsory registration law for tuberculosis in Chicago, consequently the authorities know nothing of the foci of infection, excepting in the cases of death, when they get their more or less reliable reports from the physicians, and their usually trustworthy information from the organized undertakers. On such information they send out to the physician a card of inquiry asking whether he considers disinfection of the premises desirable. By replying to this the doctor generally wastes his time—for that's the end of it.

GENERAL.

Women in Medicine.—At the University of Michigan there are at present forty-three women pursuing the study of medicine and surgery, while in the department of law there are only four female students.

Officers of the Southern Surgical and Gynecological Association.—At the last meeting of this Association the following officers were elected for the ensuing year: President, Dr. Lewis C. Bosher, Richmond, Va.; First Vice-President, Dr. John D. S. Davis, Birmingham, Ala.; Second Vice-President, Dr. I. S. Stone, Washington, D. C.; Secretary, Dr. W. D. Haggard, Nashville, Tenn., reelected; Treasurer, Dr. Charles M. Rosser, Dallas, Texas, reelected. Louisville, Kentucky, was selected as the place for holding the next annual meeting, in December, 1905.

No Yellow Fever Epidemic.—Señor Quesada, the Cuban Minister, in view of reports that yellow fever was again obtaining a foothold in Cuba, and that the Cuban Government was not vigorously enforcing sanitary precautions, this week gave out a statement which is in part as follows: "There has been no epidemic of quarantinable diseases. Yellow fever, smallpox, cholera, and the plague have not developed in Cuba since the proclamation of the republic. Neither of the two cases of yellow fever at Punta de Sol in October and November has propagated beyond the original case."

Doctor's Bill, $126,000.—Dr. L. C. H. E. Ziegler, in the Probate Court of Chicago, recently filed a bill of particulars as to claims made by him against the estate of Mrs. Harriet G. McVicker, who died recently in California. Mrs. McVicker was the widow of the theatrical manager, J. H. McVicker. Dr. Ziegler's claim in full amounts to $126,000, the bill including copies of contracts which Ziegler says existed between himself and Mrs. McVicker. The first contract provides that after the death of Mrs. McVicker the sum of $100,000 shall be paid to Dr. Ziegler as soon as possible. This money, according to the contract, was to be given for services as medical adviser.

Levy Tax for Consumptives.—For the maintenance and cure at Denver, Col., of Hebrew consumptives from all parts of the United States a per capita tax is being levied on the members of leading Hebrew benevolent, social and labor organizations. Jacob Marinoff, of the Board of Trustees of the Jewish Consumptives' Relief Society, who has been sent to New York from the headquarters of the national organization at Denver to collect funds for the establishment of a large, permanent sanitarium, said that he is arranging a series of entertainments, concerts and balls to increase the sanitarium fund. The largest of the balls will be held at the Grand Central Palace, on March 9.

Medical Delegates Sail.—Twenty-two physicians left Baltimore on December 27, on board the steamship Athos of the Di Giorgio Steamship Line, bound for Panama. They are delegates from the American Medical Association to the Fourth Pan-American Medical Congress. The party from Baltimore expects to reach Colon on January 3, where they will board a special train for Panama, which Government has appropriated $25,000 for the entertainment of the visitors. The party will be taken back to Colon, and from Colon will sail on January 7 for Havana, where they will be the guests of the American Public Health Association, which meets in Havana on January 9, 1905. The U. S. Public Health and Marine Hospital Service will be

represented at the Pan-American Congress by Surgeons H. R. Carter and J. C. Perry and by Assistant Surgeon C. C. Pierce.

New Charter of the Red Cross.—A new charter of the American National Red Cross has been passed by both houses of Congress, and now needs only the approval of the President to make it operative. This charter, which puts that organization practically under the control of the Government, was drawn by two former Secretaries of State—Mr. Richard Olney and Mr. John W. Foster. Under it the governing body of the general society is to consist of a central committee of eighteen members. Six of these are to be chosen by the incorporators of the parent organization. When six or more State and territorial societies are formed, these will be entitled to elect six members of the central committee, but at present twelve of the eighteen are to be appointed by the President of the United States. When the State organizations are completed, the President will have the appointment of six central committeemen, one of whom he is to designate as chairman. It is provided that the President must select among his committeemen one from each of the Departments of State, War, Navy, Treasury and Justice. From this central committee is to be chosen an executive committee of seven members. In order that the accounts of the organization may be kept straight it is provided that its annual reports must be audited by the War Department, and thence transmitted to congress. By the operation of this provision it is intended to prevent in future such scandals as have grown out of the transactions of the society in the past. The American National Red Cross Society, which the American National Red Cross is to succeed, was organized in 1881, and Miss Clara Barton, the moving spirit in its formation, was for twenty years its chief manager. Its energies were not restricted to war, but some of its most effective work was done in furnishing relief to those suffering from great calamities like the Michigan fire of 1881, the Florida yellow fever epidemic of 1888, the Johnstown flood of 1889, the Russian famine of 1891-92, the South Carolina tidal wave of 1893, the Armenian massacres of 1896, the Galveston tidal wave of 1900, and the Mont Pelée eruption of 1902. During the Spanish-American War the society fitted out ships for the benefit of the soldiers and sailors, but Miss Barton's management of its affairs was the subject of criticism, which, however, was directed at her methods of administration rather than her intentions. The new charter is designed to bring the Red Cross Society into effective cooperation with the Federal Government and its military and civil systems.

OBITUARY.

Dr. G. S. West, died at Palestine, Texas, his home, December 27, of heart failure. He was eighty-one years old, and a well-known Confederate veteran, having been a surgeon of the Sixteenth Alabama Infantry, later a brigadier surgeon and afterward in charge of the hospitals at Atlanta.

Dr. Henry C. McLean, a Brooklyn, N. Y., physician, died last Friday night at his home, 146 Sixth Avenue. He was born in Newburg, N. Y., in 1860, and was graduated from Manhattan College and from the Medical School of the New York University. He started his professional career in Brooklyn and built up a large practice there. He was visiting physician at St. Mary's and Kings County Hospitals, and physician to the Brooklyn Baseball Club. Dr. McLean became a member of the Brooklyn Board of Education in 1886, and served in that body for ten years.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, December 10.

THE TREATMENT OF HABITUAL DRUNKARDS—THE MEDICAL SERVICE OF THE ARMY—MILITARY SURGEONS AND THE MILITARY CLUBS.

The report of Dr. Branthwaite, Government Inspector under the Inebriates Acts, has recently been issued. It deals with three classes of institutions provided for the treatment of habitual drunkards, namely, certified inebriate reformatories; State reformatories, and "retreats." In regard to the first of these classes the following table gives a bird's-eye view of their growth in number and population:

Year.	No. of reformatories.	No. of Beds available.	No. of cases admitted.	Under detention at end of year.	Discharged or otherwise absent.	Total committals at end of year.
1899.	3	227	88	87	1	88
1900.	5	416	144	182	30	232
1901.	6	478	204	288	148	436
1902.	8	624	278	419	295	714
1903.	9	677	298	879	433	1012

From this table it will be seen that at the close of last year there were nine such reformatories in existence. Speaking of them as a whole, Dr. Branthwaite says: "The experience of another year has confirmed many of the opinions formed during the earlier stages of the work, and has resulted in definite advance in many directions." He complains of the difficulties created by the different views taken by judicial authorities of the proper way of dealing with inebriates. Some magistrates object to give what they call a three years' punishment "just for drunkenness." Dr. Branthwaite shows how foolish this objection is, both from the point of view of the inebriate and of the community. He points out that the majority of persons sent to reformatories would, if let alone, spend most of their time in prison. The real object of detention in the case of habitual drunkards is not punishment but reformation. "The community is not," says the Inspector, "in any way protected as long as inebriates, who are a danger to the public or a constant disgrace, are permitted to get drunk every month or so and wreak their vengeance on things in general. The knowledge that no improvement can result from giving longer prison sentences made up of many short periods is definite, and it is certain that intermittent penal treatment, when resorted to, needs to be continued until death or lunacy relieves us of further trouble." In support of this contention Dr. Branthwaite cites what he calls a "sample case." A woman, aged fifty-five years, was committed for two years to a reformatory in June, 1902. The mere enumeration of her previous convictions occupies nine foolscap pages of the report. The first conviction recorded against her occurred in July, 1868. During the interval between that date and June, 1902, she was before the magistrates 315 times. On 284 occasions the charge was "disorderly conduct" or "drunk and disorderly conduct." The "disorderly conduct" was probably in every instance due to the influence of liquor, the charge being stated thus to avoid the necessity of proving drunkenness. As for State reformatories, they, from causes related to public policy, have gradually become places for the care and detention of violent and weak-minded persons, who require for their care and control methods closely analogous to those associated with the detention of the most violent crim-

inals and lunatics. Nevertheless the influence of the State institution is, in Dr. Branthwaite's opinion, one of inestimable value as an agency of reform, for it exists to enable other institutions to do their work in a proper manner, unhampered by the refractory element. "Retreats" are not showing the rapid progress which is evident in the work of reformatories. Their number has not increased during the past year, nor has there been any increase in the number of patients who have been admitted to the existing "retreats." The chief reason of this is doubtless to be found in the fact that entrance to a "retreat" must be the free act of the drinker. Naturally few are willing to surrender their liberty in this way. Since the appearance of the report, Dr. Branthwaite has given evidence as to the law relating to the detention and control of inebriates before a royal commission appointed to consider the question of the care of the feeble-minded. He expressed the opinion that the legal definition of an inebriate should be extended to include persons who bring themselves to the condition of inebriates by the use of other drugs. He further pointed out that under the Habitual Drunkards' Act, 1879, there is no obligation on any authority to provide inebriates' homes, and no power to compel inebriates to enter them. Anyone who can obtain a license from the local authority can open a "retreat" for inebriates, but there are several institutions which are not licensed. Some of these are well conducted, but others are insanitary, overcrowded, badly situated, and have no proper facilities for the employment of the inmates. There are now twenty retreats, in which about 500 persons annually are submitted to detention. That number, according to Branthwaite, is ridiculously small. There are now twelve reformatories, two of which are State institutions. In the "retreats" the average of recoveries is about 30 per cent. In the reformatories, out of a thousand cases, 34 were certified as insane.

In connection with the treatment of habitual drunkards it may be mentioned that the Municipal Council of Glasgow has under consideration a somewhat Draconian method of dealing with such offenders. The proposal is that they should be banished to a lonely island on the west coast of Scotland, there to work out their own salvation removed from the influence of gin-shops. With regard to this proposal Sir Robert Anderson, one of our leading authorities on crime, says that any plan which separates inebriates from opportunities of indulgence is obviously, in the interest alike, of the drunkard and of the community. To some, however, it appears that the transportation of inebriates would be fraught with the danger of horrors such as those which led to the abolition of that form of penalty in the case of criminals.

The Medical Service of the Army is at this moment without an official head. The term of office of the late Director-General, Sir William Taylor, expired on December 1, and there has been a veritable tug-of-war between the military authorities and the Advisory Board which is partly composed of civilian doctors, as to the choice of a successor. The former wish to have a representative of the old order of things; the latter insist on having a man of progressive ideas. The Secretary of State for War, Mr. Arnold-Forster, must have a bad time between the contending parties. He came into office a few months ago with a preconceived policy, the essential feature of which was to undo the work of reform that had been done by his predecessor, Mr. Brodrick. The question whether Mr. Brodrick was or was not a heaven-born War Minister, as his friends declared him to be, need not be discussed here. But there is no doubt whatever that as far as the improvement of the medical service of the Army is concerned, his work was, as far as it went, almost wholly good. Mr. Arnold-Forster's attitude toward the doctors was at first distinctly hostile. The experience gained during his short period of office seems, however, to have taught him that in regard to the medical department, at any rate, it would be a fatal mistake to go back to the old order of things. But the Adjutant-General who, in accordance with the latest scheme of reform, controls the medical service, and who is a staunch upholder of what in Germany is called Junkerism in military administration, has threatened to resign unless he has his way in the appointment of a Director-General of the traditional type. To speak plainly he wants an officer grown grey in the service who may be trusted not to trouble the repose of the War Office by a consuming zeal for the efficiency of his department. The Advisory Board on the other hand are eager to break a tradition which they hold to be largely accountable for the discredit into which the service had fallen at the time of the South African War. They have used all the influence they could bring to bear on the Government to have Deputy Director-General Keogh appointed head of the medical service. Such an appointment would be almost revolutionary, for Keogh is a comparatively young man who was promoted to his present post over the heads of a large number of senior officers. His only disqualification, however, even in the eyes of the military faction, is his youth. It is probable that he will be appointed, as it is understood that Sir Frederick Treves has used all his great influence with the King in his favor, and the Sovereign has—on personal, not on constitutional grounds—a good deal to say in army appointments, if he cares to intervene.

Some years ago it was difficult for a medical officer of the Army to secure election at one or two of the "Service" clubs. At that time a majority of the army doctors were men of rather indifferent breeding from the Scottish and Irish schools, and it must be admitted that many of them were from the social point of view "undesirables." Members of the clubs accordingly conspired together to exclude medical officers, and as a very small proportion of blackballs is sufficient to "pill" a candidate, they generally succeeded. The improved conditions of the service have for a few years past attracted a better class of men in the professional as well as the social sense, and the ill-feeling against the medical branch that used to exist among combatant officers has to a large extent died out. That it still persists in certain quarters, however, is shown by the fact that the other day no fewer than seventeen doctors were rejected in a body at the Junion United Service Club. The incident has excited a good deal of indignation among the members of the club, and it has been ascertained that a clique of retired "fossils" are at the bottom of the affair. The committee of the club has called a general meeting for a day next week when the names of the rejected officers will be submitted for election without the secrecy of the ballot. If the clique persists in its opposition to doctors, the medical members, who number about one hundred and fifty, will organize themselves into a clique which will systematically blackball every candidate proposed for election, to whatever branch of the Army or Navy he may belong.

THE EXPERIMENTS OF L. LIEBERMANN.

To the Editor of the MEDICAL NEWS.

DEAR SIR:—In an editorial published in your issue of December 24, you refer to the recent labors of L. Liebermann in the following terms: "The experiments

of L. Liebermann on colloidal platinum also opens a vast field of possibility in the domain of pathology. This observer states that the mechanism of the oxidative reaction helps to explain certain phenomena connected with the destruction of foreign and toxic bodies in the organism. Certain pathogenic bacteria are rendered innocuous by uniting with protective bodies normally present in the organism, the complements of Ehrlich. But these act so slowly that they cannot fortify the organism against an intoxication. On this account another body is necessary, the amboceptor (immune body), which will unfold the activity of the complement. The analogy to the phenomena of the oxidative reaction is as follows: The pathogenic agent corresponds to the tissue, the complement to the active oxygen, and the amboceptor to the oxidase. The amboceptor is thus nothing more than a catalyzer."

I wish to call your attention to the fact that Liebermann's conclusions only confirm those submitted by myself two years ago, in the first volume of my work on the "Internal Secretions, etc." The most casual perusal of this volume will show that the 800 pages it contains serve mainly to emphasize the overwhelming importance in physiology, *pathology* and therapeutics, of the oxidizing substance, the so-called "oxidases" of the blood. Not only is their rôle in each organ, including the nervous system, defined, but their identity (the secretion of the adrenals, which, by taking up oxygen in the lungs, becomes my "adren*oxin*") is also given. The complement of Ehrlich is assimilated therein, owing to its physicochemical attributes, to a trypsin-like body in the blood-stream. This body, in order to become effectively bactericidal or antitoxic, is stated by me to require the aid of adrenoxin —also said, owing to its properties, to correspond with Ehrlich's amboceptor or immune body. I likewise specify that adrenoxin only produces its effects indirectly, *i.e.*, by catalysis, its rôle being to combine with a third body, fibrinogen, in order to enhance through the effects of an exothermic reaction, the proteolytic activity of trypsin, which activity as is well known, steadily increases under the influence of heat, up to a given limit.

Very truly yours,

CHARLES E. DE M. SAJOUS.

Philadelphia, December 26, 1904.

SOCIETY PROCEEDINGS.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Seventeenth Annual Meeting, held at Birmingham, Alabama, December 13, 14 and 15, 1904.

The Association met in the Council Chamber of the City Hall, and, in the absence of the President, Dr. Floyd W. McRae, of Atlanta, Ga,. the Second Vice-President, Dr. J. Shelton Horsley, of Richmond, Va., presided.

Addresses of Welcome were delivered by Mayor Drennan and Dr. L. G. Woodson, which were responded to by Dr. W. P. Nicolson, of Atlanta, Ga.

After a brief report from Dr. John D. S. Davis, Chairman of the Local Committee of Arrangements, relative to entertainments, order of procedure, etc., the reading of papers was proceeded with.

Method of Uniting Intestines of Very Small or of Unequal Caliber.—Dr. J. Shelton Horsley, of Richmond, Va., said that there were many modifications of sutures, but all of them might be divided into two general classes, the continuous and the interrupted. Taking it for granted that each suture penetrated all coats of the intestines, he demonstrated experimentally that the continuous suture more nearly fulfilled the ideal conditions for intestinal healing than the interrupted suture. Serous surfaces united after being sutured on account of the hyperemia of repair, and this was dependent upon some slight injury to the peritoneum. In the case of an interrupted suture, union was obtained within the bite of the suture by hyperemia caused by pressure of the suture, by the trauma of the needle, and by the presence of the thread. Between the sutures the pressure from thin intestinal tissues was practically *nil*, so union depended solely upon extension of this hyperemia, and if this process did not extend from one stitch to another, leakage would surely occur. If continuous and moderate pressure was made on two serous surfaces, sufficient injury would be done those surfaces to cause adhesions. This continuous pressure along the entire margin of an intestinal wound could be obtained only by the continuous suture, and not by the interrupted. He described nine experiments in which an area of intestine was included between two lines of sutures. In only four of these did the whole area between the rows of sutures unite, demonstrating that something besides mere approximation of serous surfaces was necessary for satisfactory union. The method of suture was difficult to describe without accompanying illustrations. The intestinal ends to be united were placed side by side with their convex borders in contact and clamped with a hemostatic forceps. Then he used a suture that passed through the whole of the intestinal wall, sewing together with a continuous stitch a crescentic area excised; then changing the stitch to a Cushing right-angled continuous suture penetrating all the coats and invaginating the remaining margins of the wound. When the first knot was reached in the suture, it was invaginated and the suture continued by two or more insertions of the needle; with the last two insertions of the needle, as secure a hold as possible was obtained without penetrating the mucosa. The very last insertion of the needle was in the reverse direction of the other insertions so that when the knot was tied it was partly buried. The bowel was then returned to its natural position, and the mesentery sewed up with continuous stitches. A number of photographs and specimens from dogs were exhibited, demonstrating some of the advantages claimed for this method. These specimens had been filled with paraffin and then photographed; afterwards the intestine was removed, and the paraffin model was also photographed, giving a very good idea of the large lumen at the site of the union.

Dr. W. P. Carr, of Washington, D. C., stated that the holding of the bowel with a clamp, a rubber ligature, tape, or something of that sort, to prevent the escape of intestinal contents during operation was the only part of intestinal suture that seemed not to be as perfect as it might be. There was more or less danger of injuring the bowel by any sort of clamp or ligature which was put around it tight enough to prevent the intestinal contents from escaping. The Murphy button or any form of clamp might possibly do that at times, particularly if the bowel was already more or less inflamed at the time of the operation. He thought it was better to hold the bowel with the fingers of an assistant when this was possible, although it facilitated the operation very much to take the bowel in a long clamp not far from the point where it was going to be sutured, as it prevented the sliding of the coats of the bowel over each other.

Dr. Herman J. Boldt, of New York, personally preferred suturing to using buttons or mechanical devices for the purpose of intestinal anastomosis.

Lateral Anastomosis.—Dr. J. M. T. Finney, of Baltimore, Md., said that in his experience he found that there were certain technical difficulties to the end-to-end suture which were hard to overcome. For instance, at the mesenteric border it was difficult to obtain satisfactory union; there was so much likelihood that a leak would occur there, that it had been his practice for the last two years to use almost exclusively lateral anastomosis, closing both ends. This gave more satisfactory union. He was an advocate of the interrupted suture.

Continuous Suture.—Dr. A. Palmer Dudley, of New York, stated that in his experience the use of the continuous as against the interrupted suture had been followed by fairly good results in intestinal work.

Dr. W. S. Goldsmith, of Atlanta, stated that in placing continuous sutures around the bowel, where there was likely to be distention, leakage might result, and a fistula be produced by tissue necrosis incident to the distention of the bowel on account of the application of this ligature. It was a ligature in effect around the bowel; we had distention of the gut, and the ligature did not expand; there was no elasticity about it. Therefore, the interrupted suture would be his preference, although not so rapid, minimizing the pressure owing to distention or dilatation of the gut.

Dr. Samuel J. Mixter, of Boston, said that where one was in a hurry the continuous suture was quicker. He emphasized the absolute necessity of everybody practising these operations on lower animals before beginning to do them on patients. This was a point that was not sufficiently recognized. Every new method should be tried on some of the lower animals. So far as his experience went, very little clamping was necessary even if there was some leakage. He did not consider that there was any great danger from septic peritonitis following, because the peritoneum was able to stand a great deal of soiling without great damage, and it could be washed off without producing any ill-effect. This was likewise true of operations on the stomach.

Intestinal Obstruction.—Dr. Dyer F. Talley, of Birmingham, Ala., said that the subject of intestinal obstruction was one which could not be too frequently presented to the profession, and one with which it could never become too familiar. It was a condition which presented many difficulties in its early diagnosis, and it was a well-recognized fact that in acute cases the life of the patient depended on early recognition and prompt surgical intervention. There were two difficulties in the way of early operation: (1) It was hard to make a positive diagnosis in the first twenty-four hours; indeed, in some cases it was impossible to do so unless an exploratory laparotomy was made. (2) There was a tendency on the part of the patient, his friends, and also the physician, to wait until tomorrow and see what purgatives and enemata would accomplish. The author reported eight cases of intestinal obstruction that had come under his care during the last fifteen months. The details of each case were recounted with singular clearness. One case showed that a laparotomy could be done without anesthesia, and many cases that were seen late and were too weak for an anesthetic might be operated on and relieved without a general anesthetic. The results of operations in the eight cases were five recoveries and three deaths.

Dr. Guy Leroy Hunner, of Baltimore, stated that from a large experience with hospital and private patients showing symptoms of intestinal obstruction, he had come to the conclusion that he would rather err on the side of operating occasionally unnecessarily than to commit the error of not interfering and be too late. Cases were cited in point.

Dr. W. P. Carr said the more he saw of cases of intestinal obstruction, the more he was convinced that whenever there was a strong suspicion of it an exploratory operation should be made. There were so many cases that had little or no symptoms for quite a while, and others that had considerable fecal movements from the lower bowel after obstruction had taken place, that one was apt to be misled. He had been misled a number of times. He narrated some interesting cases.

Early Operation.—Dr. J. Garland Sherrill, of Louisville, Ky., advocated early operation in these cases. Whenever a patient had intra-abdominal pain which was not promptly relieved, an exploration should be made. Whenever a patient had a severe pain in the abdomen that ceased suddenly, it is likely to be the result of gangrene of the gut, and for that reason such a case should demand very prompt operation. Many of these patients could be saved by opening the abdomen at once, even in the presence of shock, and in that way avoid inflammation of the peritoneum.

Dr. Chas. L. Bonifield, of Cincinnati O., recommended changing to ether when patients could not stand chloroform, particularly in children.

Laparotomy in Intussusception.—Dr. W. O. Roberts, of Louisville, Ky., narrated the case of a child, nine months old, on which he had operated. The little patient had been treated for dysentery. When he saw the patient there was a considerable amount of distention, great straining, and bloody mucus passed by the bowel. He introduced his finger into the rectum, and found an intussusception. The intussusception was within two inches of the anus. He advised laparotomy, which was consented to and performed, and found the intussusception began at the ileocecal opening, and went clear to within two inches of the anus. It was relieved very easily; but the child died in the course of twelve hours from shock. It was very important in all cases of intestinal obstruction to examine the rectum carefully.

Early Diagnosis.—Dr. Wm. E. Parker, of Hot Springs Ark., said the general practitioner ought to be impressed with the importance of early diagnosis in these cases, and if there was any question at all to call in a general surgeon, or someone who had had experience in this class of cases. He knew of no class of work in which an early diagnosis was as important, and then after this of getting into and out of the belly as quickly as was consistent with good work.

Dr. W. P. Nicolson, of Atlanta, Ga., called attention to the significance of abdominal pain. One should always bear in mind that the location of pain in the abdomen bore practically no relation to the location of the lesion itself in many instances. When a patient, with a severe abdominal pain, was not relieved by two or three doses of morphine, and did not remain relieved by this agent, but needed a repetition of it, the case was not one of indigestion. It was far more serious. He had the misfortune to operate on a young woman for intestinal obstruction, and during the operation there was tremendous fecal vomiting, which was aspirated into the lungs—some of it. She left the table in good condition, with good pulse, and with indications that she was all right; but within a short time she became cyanosed, with rapid breathing, pulse increased in rapidity, and remained conscious, but died within two hours.

Gangrene Following Intussusception.—Dr. Samuel J. Mixter said that given a patient who had had intestinal obstruction for days, and was in a very critical condition, he thought many of them could be saved if too much was not attempted, and the reason so many of these patients died was because surgeons attempted too much. Take a case of gangrene following intussusception, if a simple opening was made in the most distended

loop of bowel, a tube tied in and the intestine drained, a later operation could be done, and the patient probably saved, whereas if one attempted to do a resection or a serious operation at the time, the patient would surely die.

Morphine Masks Symptoms.—Dr. A. Palmer Dudley said that the surgeon was at a great disadvantage when he was called in to see a patient to whom morphine had been administered for the relief of pain, for the reason that it masked the symptoms. Peristalsis was arrested and the obstruction went on more rapidly. He had not given a dose of morphine in fifteen years to any patient on whom he had performed an abdominal section.

Dr. Talley, in closing, said the principal point he wanted to emphasize was the importance of early operation, because he believed that most of the patients could be saved if reached and operated upon early enough.

Review of One Thousand Operations for Gall-Stone Disease, with Especial Reference to the Mortality.—This was the title of a joint paper by Drs. William J. and Charles H. Mayo, of Rochester, Minn. The paper was read by Dr. Chas. H. Mayo, In one thousand operations for gall-stone disease there were 50 deaths—five per cent.—counting as a death every patient operated upon who died in the hospital without regard to cause of death or length of time thereafter; 960 for benign disease, with 4.2 per cent. mortality. More than one procedure through a single incision, only the major was counted, therefore 101 cholecystostomies, and 44 cholecystectomies in connection with common duct operations were not included. Of 673 cases operated upon by cholecystostomy there was a mortality of 2.4 per cent. This group included most of the acute infections. In no case did the stones reform in the gall-bladder. This was the operation of choice in the average uncomplicated case, and especially if there was or had been cholangitis. Of cholecystectomy, there were 186 operations, with a mortality of 4.3 per cent. This operation was employed for special indications, such as cystic duct obstruction, thick-walled gall-bladders suspicious of malignant disease, and cholecystitis without calculi. There were 137 operations for stone in the common duct, with a mortality of 11 per cent., 7 per cent. from the operation, and 4 per cent from secondary complications after more than three weeks. Of the cases operated upon during the quiescent period, with little jaundice and slight infection, all recovered. There were four cases with extreme icterus from obstruction, who had subcutaneous hemorrhages at the time of operation (purpura). All of these died; four cases of complete biliary obstruction in which the common and hepatic ducts were filled with clear cystic fluid and no bile, all died. Including malignant disease, 14.6 per cent. of the total were of the common duct; 40 cases of malignant disease, with 22.5 per cent. mortality; two cases with cancer of the gall-bladder now alive and well more than two years after operation; two additional favorable cases of more recent date. Of the remaining malignant cases, a few received marked palliation, but the majority were but little benefited.

Enterostomy.—Dr. J. W. Long, of Greensboro, N. C., stated that the important measures to be accomplished were, (1) the drainage of gas and feces from the intestine. (2) In mechanical obstruction, relief of distention, pain, vomiting, and toxemia (3) In septic conditions depletion of the inflamed bowel and peritoneum, overcoming intestinal paralysis and sepsis. (4) Protection of the peritoneum as in typhoid perforation. (5) Nourishment of the patient by making an artificial mouth. Enterostomy was employed only in the most desperate cases and in those where it was indicated the patient is always in imminent peril of speedy dissolution from some of the conditions above indicated. In all forms of intestinal obstruction the patient suffered from distention and absorption of the toxins. When septic peritonitis was present, the sepsis itself produced suspenion of peristalsis, which was sufficient to account for the obstruction. In mechanical obstruction, to this factor was added painful peristalsis. In recent years enterostomy had been applied to a number of conditions other than intestinal obstruction *per se*, the principal indication being feeding the patient through the fecal fistula. This operation had been applied to cases of inoperable carcinoma of the stomach, a fistula being made in the jejunum and the patient fed through it; life prolonged, and the patient made more comfortable. Enterostomy was also to be applied to typhoid perforation, catching up the perforated bowel and fastening it to the wound, it being more quickly done than closure of the perforation; at the same time, the bowel was drained and the patient fed through the fistula. Dr. Long reported eight cases of enterostomy occurring in his practice in twenty-two years, with five recoveries or 62½ per cent. He drew the following conclusions: "(1) Enterostomy is a life-saving measure and never an operation of choice. (2) Enterostomy is not indicated where a more ideal surgical procedure is feasible. (3) In the hands of an experienced, carefully trained, competent surgeon, capable of dealing with grave emergencies, enterostomy need rarely be resorted to, but the better the surgeon, the more quickly he will adopt any measure which will rescue his patient. (4) Every abdominal surgeon must, according to the abundance of his material, find cases in which only enterostomy can with propriety be done. (5) When an enterostomy is indicated, to hesitate is to lose the patient; to operate promptly, dextrously, and with celerity means to tide the patient over the imminent peril and spare him for future consideration."

Drain the Intestine.—Dr. James A. Goggans, of Alexander City, Ala., said that drainage of the distended intestines was very important. He made it a rule, if possible, when he did a laparotomy for any trouble whatever, to drain the intestine in order to let it regain its elasticity and move the fecal current along as it should. He commended the author of the paper for advocating enterostomy and draining where the intestine was greatly distended in the class of cases under consideration.

Dr. J. Garland Sherrill said that enterostomy had a place in surgery in those cases where complete surgery could not be done; but whenever a surgeon sent a patient away from the operating table with an open intestine, he subjected the profession and himself to criticism from the laymen who did not understand the condition. Therefore, he would lay it down as a rule that no enterostomy should be done in any case where it was possible to do complete surgery, and instead of widening the field for enterostomy surgeons should strive to contract it.

Dr. J. S. Stone, of Washington, D. C., said the essayist must have gotten hold of a number of very difficult and delayed cases for operation. He thought the idea of the essayist was simply this,

that rather than let a patient die from obstruction, he would catch up a loop of bowel and make an artificial anus. This was the old-fashioned way of doing enterostomy, and the essayist got as good a mortality as most surgeons would have gotten under the same circumstances. Dr. Long, in closing, said it would seem that he had unfortunately ran afoul of quite a number of cases in which it seemed proper to do enterostomy. These eight cases were spread over a period of more than twenty-two years of practice. He doubted if any surgeon had a better percentage of recoveries in cases of acute intestinal obstruction by any method than that which he had reported, namely, 62½ per cent.

Abuse of Purgatives Before and After Abdominal Section.—Dr. I. S. Stone, of Washington, D. C., read a paper with this title in which he said that purgatives should be given as evacuants, and should not produce hypercatharsis, whether administered before or after abdominal section. Bland evacuants, such as castor oil, aided by suitable enemata, would empty the bowels without causing severe exhaustion. The writer agreed with Ochsner's method. The excessive purgation, hypercatharsis, commonly employed, was intended not only to empty the bowels, but to perform additional service, namely, to remove collections of serum or other fluids which might be in the peritoneal cavity. A large majority of the sections made at the present time might be called minor pelvic or abdominal. In these no infection existed, nor was the intestine in any way involved. Such cases required only the mildest evacuants, with sterile diet in the preliminary treatment. He deplored the extreme and unnecessary purgation to which these patients were frequently subjected. If the minor abdominal cases were not in need of hypercatharsis, one might next consider how consistent was this rigorous catharsis in very ill patients. Vomiting, paresis, ileus, and excessive distention after operation were frequently exaggerated and aggravated by the administration of the worse than useless cathartics which were usually given. No remedy had been discovered for vomiting due to anesthesia, and this fact should interdict the annoyance given patients by using purgatives before normal peristalsis had been restored. The only remedy of value for vomiting was the regulation of stomach contents, both as to character and quality of substances ingested. The stomach tube was therefore an instrument of great value, if one had need to reach and treat this viscus, with a view of obtaining rest and relief of distressing emesis. It had been shown that patients had bowel movements (peristaltic) after surgical operations, because they were ready to act rather than because one had found any method to produce such results. Hypercatharsis did more than anything short of venesection, or the use of dangerous heart depressents, to unfit patients for prolonged anesthesia and operation. The prompt administration of purgatives after operation appeared to cause vomiting and reversed peristalsis, and to add to the general discomfort of the patient. The temporary paralysis of the intestines in nearly every case was to be desired, and nearly all patients having been properly prepared would recover far more satisfactorily with perfect rest until normal peristalsis returned, than with the aid of all sorts and kinds of irritants intended to produce quick movements of the bowel. If the intestines were not actually scoured by catharsis and had only been fairly well emptied of excess of gas and fecal matter, they would respond to treatment after operation with far greater ease than when made absolutely empty.

(To be Continued.)

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904,

SECTION ON LARYNGOLOGY AND OTOLOGY.

(Continued from Page 1200.)

The Treatment of Non-Suppurative Disease of the Middle Ear.—Dr. Urban Pritchard, of King's College Hospital, said the treatment of non-suppurative disease of the middle ear is, with certain exceptions, very unsatisfactory. The classification of the conditions included under non-suppurative disease of the middle ear is not yet agreed upon, but for discussion of treatment the following rough divisions will suffice: (1) Acute non-suppurative otitis media. (2) Early stages of chronic non-suppurative catarrh. (3) Advanced stages of the same. (4) Middle ear adhesions, the result of former acute inflammation. (5) Sclerosis resulting from disease of the bony capsule enclosing the internal ear, and forming the inner wall of the tympanic cavity, and this is not a catarrh at all.

Treatment of Non-Suppurative Acute Otitis Media.—Teach mothers to put a mustard leaf behind the ear instead of a septic onion and such like into the external meatus, and then fewer would run on to suppuration. In the earliest stages, gentle, not forcible, politzerization (not catheterization) will often relieve the pain at once, and tend to cut short the attack. Counter-irritation behind the ear is always most valuable, and will often arrest the otitis and relieve the pain. Instillations are only occasionally advisable; when used, should be strong anodyne solutions—for example, cocaine or morphine—in an antiseptic medium. Glycer. acid carbol. has been strongly recommended; also adrenalin with cocaine, but he does not think them of much service. Heat in the form of very hot fomentations, or hot bran bags, is very useful. Leeches in front and below the ear are valuable in very acute cases. Incision of the membrane is called for when there is marked bulging of the membrane. The meatus must be purified and afterward dressed antiseptically to avoid suppuration. Purgatives are nearly always necessary. Phenacetin or antipyrin, etc., may be given to relieve the pain. Pharyngeal treatment is usually required, but nasal douches or irrigations must absolutely be avoided. Politzerization should always be employed; will restore the hearing and prevent adhesions. If adenoids are present they must be removed.

Treatment of Advanced Stages of Chronic Middle-Ear Catarrh.—This is much less satisfactory, on account of the adhesions causing retraction of the membrane and fixation of the membrane and ossicles. Catheterization is often preferable to politzerization, but the value of courses of repeated inflations has been much overrated. Patients must be warned against the constant recourse to Valsalva's method of inflation; at the same time, cautiously employed it is of value. Gentle suction by means of Delstanche's masseur is occasionally of value, but may easily be overdone. We have yet to learn the value of the rapid suction massage recently introduced. The Eustachian bougie has been overrated. The objections to its use are: First, the risk of injury to the delicate ciliated mucous membrane; the narrow part of the tube being bony, it cannot be dilated except at the expense of this mucous membrane;

secondly, in advanced cases the loss of hearing power is almost always due to changes in the tympanic cavity and not in the Eustachian tube. Nasal irrigations of sterile alkaline and saline solutions are of much value. Inhalations of the ammonium chloride fumes, with cautious Valsalva's inflation to introduce them through the Eustachian tubes, form a most valuable treatment, but long-continued use, with intervals of rest, is necessary. Injections through the Eustachian catheter are much employed by some surgeons, and are occasionally of value; probably a sterile solution of sodium bicarbonate is the most efficacious. Occasionally, when the mucous membrane is glazed and dry, small doses of potassium iodide with ammonia, so as to produce slight symptoms of coryza, combined with some form of inflation, will yield excellent results. Turkish baths are of value in some of the less advanced cases.

Hard Paraffin in Nose Deformities.—Dr. Walker Downie, of Glasgow, spoke of his experience in 100 patients, in the past two and one half years and concludes: That the operation of the subcutaneous injection of paraffin to raise a sunken nose, if properly performed, is practically devoid of danger. Further, where the deformity is of the nature of a sinking-in, and where the skin covering the sunken area is healthy, the shape of the nose can in all cases be improved, and in most the deformity can be by this means wholly removed. This operation, by modifying or removing a disfiguring and prominent deformity, is the means of conveying much comfort to the individual operated upon.

Section on Medicine.

A Disseminated Form of Croupous Pneumonia in Children, or Primary Bronchopneumonia.—Dr. Samuel West, of London, drew attention to the fact that acute pneumococcal inflammation in the child often occurs in a disseminated form. Acute inflammation of the lung presents itself in two forms: in the one as a massive consolidation, in the other as disseminated patches. The massive consolidation is the type in the adult; it often comes on without previous illness or obvious cause, and is therefore called idiopathic or primary. The patchy or disseminated form is the type in the child. It usually follows bronchitis, and is therefore called secondary consecutive pneumonia, or more commonly bronchopneumonia. Massive consolidation is rarely met with in children. At St. Bartholomew's Hospital, during a period of ten years, there were admitted 412 cases of bronchopneumonia, of which 82 per cent. were under five years of age. During the same period, 1,786 cases of lobar pneumonia were admitted, of whom only 14 per cent. were under the age of five years, the relative frequency of bronchopneumonia at this age-period being as 6 to 1. The description usually given of bronchopneumonia in children would lead to the conclusion that it was rare, except as the result of bronchitis. Yet this is not so. On the contrary, a considerable number of the cases occur without antecedent bronchitis, begin and end just like the acute pneumonia of the adult, and might be regarded as such, except that during life the physical signs show, and in fatal cases the post-mortem examination demonstrate, not massive consolidation, but disseminated patches.

Bacteriological evidence, then, so far as it goes, shows that in the primary cases of bronchopneumonia the pneumococcus is almost as frequently found as it is in the acute pneumonia of the adult, and thus confirms the conclusion to which clinical observation leads—that primary bronchopneumonia is of pneumococcal origin. It seems, therefore, fair to draw the following conclusions: (1) That the primary and secondary bronchopneumonia have a different bacteriology. (2) That primary bronchopneumonia, is of pneumococcal origin. (3) That pneumococcal inflammation is almost as common in the child as in the adult. (4) That it takes a different form in each, usually leading to massive consolidation in the adult but to disseminated patches in the child. In other words, lobar pneumonia and primary bronchopneumonia are the same disease. There are many peculiarities of structure in the child's lung which seem adequate to explain why inflammation of the lung in a child should take a different form from that which it presents in the adult.

Human and Bovine Tuberculosis.—Dr. Nathan Rau reiterated the theory which he put forward twelve months ago at the British Medical Association in Swansea, and which he believes is thus supported by eminent authority, namely, that the human body is affected by two varieties of tubercle, one producing phthisis pulmonalis, and generally attacking adults; the other bovine tuberculosis, attacking children during the milk-drinking period and producing bovine tuberculosis in children. In his original paper he expressed the opinion that these two diseases were antagonistic to each other in the human body, and that children who have suffered from bovine tuberculosis in the form of strumous glands, spinal disease, strumous joints, etc., did not develop true phthisis pulmonalis in later life—in fact, he argued that this mild bovine infection conferred a certain immunity against phthisis in the same way as vaccination and smallpox. This theory has also received great support by the work of Dr. Römer, of Marburg, who has been endeavoring to immunize cattle against tubercle. The only strain of tubercle bacilli which he finds produces complete immunity is the human strain, and by using human bacilli he has been able to immunize over 1,000 cattle, not one of which has contracted tubercle, although repeatedly exposed to infection by living in the same stalls with infected cattle. If human bacilli will protect cattle, it is natural to suppose the converse—that bovine tubercle in children will protect them against human tubercle or phthisis. He concluded by expressing the opinion, based almost exclusively on clinical and pathological evidence, that human and bovine tuberculosis are separate and distinct varieties of disease, as shown by Professor Koch; but that the human body is susceptible to both, and especially to bovine tuberculosis in the early periods of life. The two diseases are so rarely seen together in the human that there seems to be some ground for presuming that they are antagonistic to each other, and that bovine tuberculosis may possibly confer an immunity against human tuberculosis. If this opinion should prove correct, he ventures to submit that it would reconcile the conflicting opinions which have been so frequently expressed during the last two years on this most terrible of all diseases.

Heart Disease in Pregnancy.—Dr. J. Mackenzie, of Burnley, discussed this topic, showing many charts and diagrams. In regard to the question of pregnancy occurring in women with valvular disease, the following conclusions may be drawn from this study: (1) When there is a distinct evidence of failure of compensation, or when the patient is liable to frequent attacks of failure of compensation, pregnancy should be forbidden. (2) With fair compensation, if there should be paralysis of the auricle, as evidenced by the presence of a diastolic murmur and the absence of a presystolic murmur, or of a continued irregularity of the pulse, or of a jugular pulse of the ven-

tricular type, pregnancy should be forbidden. (3) With fair compensation, with a mitral murmur systolic or presystolic in time, with the apex beat within the nipple line, and due to the left ventricle, the patient may undertake the burden of pregnancy. In all cases of valvular disease, when conception has taken place, the patient should be kept under close observation. One feature of great prognostic significance is the presence or absence of symptoms of edema of the lungs.

Role of the Lymphocyte.—Dr. G. Lovell Gulland, of Edinburgh, opened a discussion on this subject, taking up the question of the Nature, Relations, Origin, and Function of Lymphocytes. The first question which it is desirable that should be answered with some approach to unanimity is, What is a lymphocyte? Of the so-called non-granular cells of the blood most authors, following Ehrlich, distinguish four varieties: Small lymphocytes, large lymphocytes, large mononuclears, and transitional cells. There is a general agreement that the small and large lymphocytes are identical, the small being the younger form. Ehrlich says that the mononuclears are to be strictly separated from the lymphocytes, and that this separation is "founded on the fact that they differ entirely in their whole appearance from the other type, and that transitional forms between them are not to be observed." He defines them as cells two or three times the size of a red corpuscle, with a large oval, and generally eccentric nucleus, staining rather feebly, and with a relatively large amount of protoplasm free from granules, weakly basophile, and, in contradistinction to the lymphocytes, less basophile than the nucleus. They become transformed in the blood (according to Ehrlich) into the transitionals, which are to be distinguished from them by the possession of a more or less horseshoe shaped nucleus, which has a rather greater affinity for stains, and by the appearance of a few neutrophile granules in the cytoplasm. These cells are supposed to be transitional between the large mononuclears and the polymorphonuclear neutrophiles. Gulland's own view is that the lymphocytes, mononuclears, and transitionals are merely stages in the development of one type, and that there is no relation between the transitionals and the polymorphs. There are four assigned reasons for the distinction between lymphocytes and mononuclears and transitionals: (1) The cytoplasm of the latter is not so basophile. (2) The nucleus is relatively smaller in the case of the mononuclears, and differently shaped in the case of the transitionals. (3) The presence of granules in the transitionals. (4) The larger size of both sets of cells.

1. The cytoplasm of the larger cells is not so basophile, simply because there is more of it and the basophile parts of it are less crowded together. All the members of the group have a cytoplasm, of which the ground is very faintly basophile, and in all four members the depth of tint which this assumes is much the same. The strands and nodes of the cytoplasmic reticulum which traverse this ground substance vary a great deal in thickness and in closeness of apposition, not only in different cells, but in different parts of the same cell. The thicker the strands and the more closely they are apposed the more basophile do the cells appear to be. Thus, in small lymphocytes in which the strands are short and densely crowded together, the cytoplasm looks almost homogeneously basophile to superficial observation. In larger cells the astrosphere is always left free, and as the amount of cytoplasm increases the strands are more separated, become thinner and are not so basophile. But until the cytoplasm attains a very large size in the large mononuclears there is always some part or parts of it which show the original structure and deeper basophile staining. Ehrlich has himself noted that in the neutrophile series the younger cells are more basophile than the older.

2. The shape and staining of the nucleus. This, in leucocytes, is a matter of no importance. All are agreed that the neutrophile myelocytes and polymorphs belong to the same series, but what nuclei could be less alike than the pale oval one of the myelocyte and the dark twisted one of the polymorph? But not only is the polymorph derived from the myelocyte, but, as Ehrlich says, one has only to examine any film of pus to find that the polymorphous nucleus can and does become oval again, and, further, the eosinophile sputum of certain asthmas contains countless cells which, if they were in the blood or marrow, one would unhesitatingly call eosinophile myelocytes, though the eosinophiles in the blood of the same case all have polymorphous nuclei. M. Heidenhain's researches, which explain satisfactorily all the changes undergone by leucocyte nuclei, have met with far too little attention from both pathologists and hematologists. The cytoplasm consists of a ground substance in which are imbedded radii which have their center in the centrosomes, astrosphere, or attraction sphere. When the cell is in a state of rest the pull of these radii tends to bring the astrosphere to the center of the cell. The usual obstacle is the nucleus, and in cells with a small amount of cytoplasm, for example, lymphocytes, the pull is not strong enough to bring this about. As the cytoplasm increases in amount the pull becomes stronger, and the nucleus is pushed to one side and ultimately deformed, becoming first kidney shaped and finally horseshoe shaped, at which stage the astrosphere comes to rest in the center of the cell, for example, transitionals. But in some cases the cytoplasm is relatively very large in amount, and here the astrosphere can reach the center of the cell without causing any deformation of the nucleus, for example, large mononuclears. If a nucleus is about to divide, it probably usually swells up and reassumes the circular form first. If a cell begins to move, the nucleus moves with it, and may be secondarily deformed by movement—for example, polymorphs, eosinophiles, and some transitionals—and, of course, the more ameboid the cell the greater the deformation is likely to be. It will be obvious how this rule explains the shape of the nuclei of leucocytes, and why the nuclei of the more ameboid series (neutrophile, eosinophile, basophile) are so frequently polymorphous, while those of the lymphocytes, or less ameboid series, are only occasionally polymorphous, though transitionals have a polymorphous nucleus much more often than is supposed. The depth of staining of the nucleus in different cells depends on the spacing of its chromatin, in the same way as in the cytoplasm.

3. The presence of granules. The granules of the other series are really the nodal points of the reticulum of the cytoplasm, and Gulland's observations have since been confirmed by Arnold and others. In this sense all lymphocytes are granular, for there are nodal points in their cytoreticulum as in the others; but they are generally much less conspicuous, and in the smaller lymphocytes are often concealed by the thick strands. In the large lymphocytes, mononuclears, and transition-

als they often attain a considerable size, and it has been shown by studies with the Romanowsky stain and its modifications that they are not neutrophile, but take up the methylene-azure of that stain. Wolff, indeed, regards them as specific for the lymphocyte series, and their presence in all the above cells furnishes another proof of the identity of the different forms. That the granules cannot be demonstrated in all lymphocytes seems to depend on conditions of solubility not unlike those of the mast-cells, and one often finds negative pictures of them.

4. Size of the cells. The mononuclears are always large cells—their large amount of cytoplasm necessitates this—but some transitionals are no larger than a medium-sized lymphocyte. The size of the mononuclears and transitionals seems largely to depend on the taking up of fluid—in the blood at least—as the strands of the reticulum are often widely separated, and these cells are obviously soft, as may be seen from the way in which they are indented in films by the red corpuscles, which does not happen to the smaller members of the series.

The Function of Lymphocytes.—There is, of course, no doubt that they are largely protective, especially when present in lymph glands, etc. It is not yet settled whether those of the blood are directly protective, whether they are present there in process of being carried to reinforce lymphatic tissue, or whether they are nutritive, or have some other function. On the one hand, it is difficult to imagine that the millions present in the blood are concerned only with defence; on the other, the facts of leucocytosis show how rapidly the polymorphs have to be increased on occasion, and how great this increase may have to be. We are apt to forget that our bodies are constantly being attacked by organisms, and that illnesses represent only the more vigorous attacks attended with some measure of success. It is interesting to note that the main dépôts of lymphocytes, apart from lymph glands and marrow, are round the hollow tubes of the body, the alimentary and respiratory tracts, and that these are the places which are occupied by saprophytic, nonvirulent, or attenuated organisms. It seems possible that lymphocytes are adapted and sufficient to keep these in check. They are certainly not sufficient to resist virulent infections, which have to be met by polymorphs. Lymphocytes multiply so easily in connective tissue that the small percentage in the blood is enough for reinforcement and for direct protection there; polymorphs do not multiply well in connective tissue, hence their percentage in the blood must be higher.

The Etiology of Leucemia.—Dr. T. Gillman Moorhead, of Dublin, spoke on this subject. Since the first recognition of leucemia as a distinct clinical and pathological entity some sixty years ago, this disease along with most others that principally affect the blood-forming tissues, has remained an etiological puzzle, and, although many have investigated the subject and some few have attempted to produce the disease experimentally in the lower animals, no definite and confirmed result has as yet been reached. Of late, discussion and investigation has principally centered around the inter-relationships of the different diseases to which the generic term leucemia is applied, and attempts have been made to prove that they are all primarily diseases of the bone marrow. It was not his intention, however, to enter into this discussion, or to consider the supposed different functions and properties of the various forms of white blood corpuscles. It is sufficient to state that both the lymphatic and splenomedullary type of disease, appear to be essentially the result of morbid changes in the hemopoietic tissues, and that in both diseases, changes in all parts of these tissues may be expected to occur. The close physiological connection of the spleen, bone marrow, and lymphatic glands has indeed been shown by their universal reaction to lymphotoxic and myelotoxic serums as proved by Flexner. Moreover, the occurrence of cases, in which, as far as the blood itself is concerned, the type of disease changes, by a myelocythemia becoming converted into lymphocythemia, supports Flexner's results, and is referred to, in order to point out that in experiments attempting to produce either form of leucemia, the actual production of any changes in the hemopoietic tissues will have a positive value. The various theories that have been propounded concerning the etiology of the disease may be reduced to two, namely (1) the parasitic theory, and (2) the toxic theory. Writing in 1898, Robert Muir states that no parasite of the nature of the malarial organism has been observed in leucemia, and that there is no adequate evidence that any bacterium is concerned in the disease. Since that date, however, Löwit has described an ameboid organism which he calls the *Hæmamœba leucæmiæ magna*, and which he states can be demonstrated by special staining methods in the blood and tissues of patients suffering from splenomedullary leucemia. A similar but smaller organism, which he terms the *Hæmamœba leucæmiæ parva*, is to be found, according to the same observer, in the blood of lymphatic leucemia patients. These organisms are stated to form spores and to pass through stages very similar to those of the malarial parasite. They have not as yet been artificially cultivated. By injections of fresh tissues obtained from leucemia patients immediately post mortem Löwit claims to have produced in rabbits pathological changes which closely resemble those found in myelogenic leucemia, and to have found the hemameba in the diseased parts. Similar injections into dogs, cats, and guinea pigs did not produce any changes. These results have not as yet been confirmed, although it is now more than three years since the date of their publication. The author further spoke of the toxic theory and gave a series of his own experiments leading to no definite conclusions.

(To be Continued.)

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held November 14, 1904.

The President, T. E. Satterthwaite, M.D., in the Chair.

Cirrhosis of the Liver and its Treatment.—A discussion on this subject was the order of the evening, and it was opened by Dr. Leonard Weber. He said that in his experience fatty cirrhosis was almost as frequent as Laennec's. In the latter, after a more or less pronounced stage of hypertrophy, the liver begins to retract, and then, with or without periods of intermission, goes on to atrophy. He thought the hypertrophic form of cirrhosis, described by French writers, must be very rare in this country. He had never met with but one instance of this, although on two or three other occasions he believed that he had such a case under observation, but presently retraction set in. In Glissonian cirrhosis we have practically a perihepatitis. In atrophic

cirrhosis we have long been accustomed to consider the condition as a primary disease, and the accompanying splenic tumor as due to passive congestion; but quite recently it has been contended that this was a mistake and that hepatic cirrhosis should be placed in the category of blood diseases, along with anemia and leucemia. Under this hypothesis the enlargement of the spleen is of primary importance, and in the opinion of some the origin of the condition in the liver.

Statistics of Cirrhosis.—Dr. James K. Crook spoke of the importance of an early diagnosis, saying that if it was to be of use to the patient, the diagnosis should be made in the early stage of the disease. In considering the diagnosis one must inquire into the causation of hepatic cirrhosis. What are the factors producing it? In which sex, at what age, and under what conditions of life does it most frequently occur? In the records of the New York Board of Health for the last decade of the nineteenth century the ages of the patients dying from the disease are found to be as follows:

Under one year	9
Under five years	11
From 5 to 10 years	11
From 10 to 15 years	9
From 15 to 25 years	553
From 25 to 35 years	1061
From 35 to 45 years	1196
From 45 to 55 years	959
From 55 to 65 years	565
From 65 to 75 years	140
From 75 to 85 years	14

These figures corroborate observations previously made. While no period of life is exempt, by far the greater number of cases occur in adult middle life. Over 68 per cent. occur at this period and over 62 per cent. in males. Another point of interest is the nationality of the patients. In New York 26 per cent. of the cases referred to occurred in native born Americans, and 73 per cent. in aliens. Among the latter, the Irish are a little in the lead, but the Germans make a very close second.

Causation.—The use of alcohol is regarded as the leading cause of the disease, and so experienced an observer as Murchison stated that he had never seen a case except in those addicted to it. The strong distilled liquors are usually supposed to be especially productive of cirrhosis, but it is also found to be common among those principally using malt liquors, as the Germans, while Lancereaux attests its frequency in France, where the common beverage is vin ordinaire. Other causative factors were then referred to. Syphilis has been recognized as one ever since Virchow's classic work on the subject. Out of 37 cases at the Roosevelt Hospital, a syphilitic history was obtained in three. In countries like southern Italy, where malaria is endemic and chronic, there appears to be a clear connection between this affection and cirrhosis, but in climates such as ours the relation is difficule to trace. Osler states that at the Johns Hopkins Hospital he has never met with a case in which malarial disease resulted in cirrhosis. Other causes which have been assigned are typhoid fever, yellow fever, and other infectious diseases, and the use of highly seasoned food.

The Pathological Anatomy of Hepatic Cirrhosis.—Dr. Frank Grauer read a paper on this topic. The three most frequent forms met with are the atrophic, the hypertrophic, and the syphilitic. In the atrophic or multilobular, the common variety of the disease, the reduction of the size of the liver is not invariable. In many instances the organ retains its normal size, and sometimes it is moderately enlarged, this enlargement being due, as a rule, to fatty infiltration of the liver cell. The liver is tough and inelastic, and its external surface is marked by a number of hobnail-like projections of varying size. The whole organ is found to be beset with a network of cicatricial tissue enclosing rounded islands of liver substance. Each island is made up of several lobules, but the compression to which they have been subjected may render their individual recognition difficult or impossible. In the early type of the disease microscopical examination shows clear evidence throughout of inflammatory change in the tracts of the connective tissue which supports the ramification of the portal veins. The so-called portal canals are packed with leucocytes and connective tissue cells in a state of active proliferation, and here and there columns of fibrifying tissue may be seen advancing between the twin cells. By the junction of such columns a wide-meshed network of developing tissue comes into being throughout the entire organ. In the late stage this network is seen to consist of dense fibrous tissue which has generally lost the highly cellular character seen at an earlier period. Such tissue has a strong tendency to contract, and thus it compresses the liver cells contained in the lobules. Some of the latter undergo atrophy and absorption, so that there are formed extensive tracts of whitish gray color, consisting of fibrous tissue, with only a few isolated groups of hepatic cells. In advanced cirrhosis the liver cells are invariably degenerated. They are also filled with large fat globules (fatty infiltration). The branches of the portal vein become compressed, narrowed and obliterated, and in some cases there is an apparent development of a few bile ducts in the strands of the fibrous tissue. The condition of the blood vessels is remarkable. If the hepatic artery be injected, it is found that the new fibrous tissue, which looks quite bloodless, is abundantly supplied with vessels from that source. Occasionally there is seen evidence of an arteriosclerosis or an endarteritis obliterans of the hepatic artery. The portal veins may show thickening of their walls with a peri- or endophlebitis. The changes in other organs, due to the portal obstruction, are enlargement of the spleen, passive congestion of the stomach and intestines, induration and congestion of the pancreas, and ascites.

Hypertrophic Cirrhosis.—In hypertrophic or unilobular cirrhosis the liver is increased in size and weight. The surface is smooth or finely granular and of a tough consistence, but does not present the leathery hardness met with in the atrophic form. The capsule is often somewhat thickened, but there is seldom the degree of thickening or of perihepatitis seen in the latter. In the majority of instances the liver is jaundiced. The cut surface is more minutely subdivided than in the atrophic form, and the cicatricial bands are finer. Microscopically, a new development of fibrous tissue is seen throughout the organ, and this with considerable uniformity surrounds the individual lobules, while in many cases it invades the lobules to some extent from the periphery. The peripheral cells are thus separated from each other and from the lobules, so that they come to lie stranded in the new tissue. The cells thus implicated are usually in a state of atrophy. In nearly all cases a remarkable plexus of bile ducts, of varying size, is found embedded in the new tissue. The mode of origin of these ducts is somewhat obscure, and the explanation given by Cornil

is probably the most satisfactory. The question has often been raised whether in this form of cirrhosis the primary process is an interstitial inflammation, followed by secondary destruction of the secreting cells of the lobules, or a primary toxic atrophy of the epithelial cells, to which the fibrous growth is secondary; and the weight of evidence is strongly in favor of the atrophy being secondary.

Syphilitic Cirrhosis.—This may be either congenital or acquired. In the congenital form the liver is large, firm, smooth and mottled, and careful inspection usually shows throughout the whole organ the presence of grayish or white points and lines corresponding to the interlobular new growth. Microscopically, there is seen great increase of the connective tissue, while in many places foci of small-celled infiltration are found. The new tissue passes within the lobules and between the liver cells, often surrounding and isolating individual cells (the so-called pericellular cirrhosis). Miliary and large gummata may be present. In the cirrhosis resulting from acquired syphilis, also there are fibrosis and gummata. In the early stage the latter are pale and grayish nodules, varying from the size of a pea to that of a marble. The large ones present yellowish centers at first, but later there is a pale yellowish cheese-like nodule, surrounded by a fibrous zone, the outer edge of which loses itself in the lobular tissue, which generally diminishes and becomes destroyed. The gummata show a tendency to undergo fibrous change, and when numerous they produce by their gradual healing the most extensive deformity of the liver. Occasionally the syphilitic changes are manifested in a thickening of the capsule, producing a perihepatitis and increase in the connective tissue of the portal canal.

Surgical Treatment.—The discussion on the surgical treatment was opened by Dr. Robert T. Morris. In certain cases of hepatic cirrhosis, he said, the production of venous anastomosis, as advocated by Talma and later by Morrison, appeared to be called for. Personally he had operated in seven cases, all of alcoholic origin. In two of these the cirrhosis was hypertrophic, and in both the result had been very satisfactory. In the five cases of atrophic cirrhosis the results were not satisfactory, four of the patients having died. In the fifth case he hoped for a better result, but only a short time had now elapsed since the operation. In cirrhosis the average duration of life after the occurrence of ascites is dated to be six months, and in the four patients operated on who died it was not as long as that. They appeared to feel better as the result of the operation, but this may have been merely a mental effect. Dr. Morris thought it important that the operation for making the venous anastomosis should be performed in as short a space of time as possible, as this class of patients did not stand shock well. He would allow but ten minutes for the whole operation. In order to save time he was accustomed to use a brush, which he had devised, for quickly removing endothelium. It was also important to close the abdomen immediately after the operation, instead of using drainage. Dr. Weber had expressed the opinion that the relief from ascites was practically due to the mere opening of the peritoneum, as in peritoneal tuberculosis. In tuberculosis the hyperleucocytosis, thus produced, was destructive to the bacilli; but in cirrhosis the condition of affairs was different, and venous anastomosis appeared to be called for.

Dr. George R. Fowler reported a case operated on during the past summer by Dr. Russell S. Fowler. The patient, a man of fifty-six years, was admitted to the medical service of the Brooklyn Hospital on July 24. He acknowledged being moderately addicted to alcohol, but denied having had syphilis. One year ago he began to suffer from what he called malaria, and about the first of May his abdomen commenced swelling. At the time of admission it was enormously distended, and after having been tapped twice, he was transferred to the surgical service of the hospital. Examination showed the liver to be small and the spleen slightly enlarged. On August 24 a median laparotomy was performed, the incision extending ten and a half inches downward from the xiphoid cartilage. A very large amount of serous fluid having been evacuated, the liver and spleen were scarified with a piece of rough crash, like Turkish toweling, and also with the edge of the knife. The round ligament was then shortened, and the liver sutured with chromic gut to the abdominal wall and the diaphragm. The omentum, which was small, was also sutured to the abdominal wall, from side to side, and finally the abdomen was closed with crossed sutures of chromic gut. Ascites returned during the first week after the operation, and was absorbed during the third week. In the second week a hypostatic pneumonia supervened, and the patient was kept constantly in a sitting posture. Since that time there had been no further accumulation of fluid. He was discharged September 28, and is now in good condition. This patient was presented by Dr. Fowler to the Association. Dr. Fowler went on to say that ascites, occurring in the course of cirrhosis of the liver, is looked upon as a direct result of obstruction to the portal circulation, due to the pathologico-anatomical changes incident to the disease. Without doubt a certain amount of obstruction to the circulation in the liver is tolerated by the general intra-abdominal circulation and compensated for by the presence of anastomosing veins between the systems of the portal vein and the inferior vena cava. That these are not sufficient for the purpose in all instances of hepatic cirrhosis is now generally admitted; but that a large number of cases of this disease are thus properly compensated is shown by the statistics of Lange, who records that out of 115 fatal cases of cirrhosis, in 65.6 per cent. there never was any ascites. Therefore, it may easily happen that there will be all degrees of compensation in different individuals, as well as all grades of demand for such compensation; from the patient with but slight need for the existence of compensating vessels—and yet the latter insufficient for such need—to the case in which the obstruction is considerable—and yet the anastomosis sufficient to meet the demands made upon it. The object of the Talma operation is to strike the balance, as it were, between the obstruction as it exists and the facilities afforded by the natural channels for compensating for the obstruction. Without doubt there is more or less compensatory dilatation of these already existing channels in some cases, as shown by the development of the caput medusae. That these finally fail in a certain proportion of instances is likewise true. It is also a fact that even with the additional channels afforded by the operation, only about one-third of the cases operated upon remain free from ascites. Greenough's statistics show 60 per cent. of failures, these being about equally divided between those who died as a result of the operation and those who were not improved by it. As to the dangers of the operation, there is a mortality of nearly 30 per cent. attached to it; to

say nothing of the risks of auto-intoxication attending the diversion of a certain amount of blood from the mesenteric veins directly into the general circulation, as shown by the experiments of Eck, Hahn and Tillmann.

Rationale of the Talma Operation.—The rationale of the operation depends upon the development of vessels of communication between the portal system and the general system directly. This may not be demanded early in the case, and may never be required. When the normal channels prove insufficient the operation should be done at once; not waiting for repeated tappings and hence great debility of the patient. In order to attain all that can be accomplished by the operation, in addition to substituting it for the second or third tapping at the most, care should be taken to provide adhesions sufficient in extent, and the vessels of which, dilating as the demand is made upon them, may serve to maintain the balance between the obstruction on the one hand and the intra-abdominal vascular tone on the other.

Many Tappings Sometimes Tolerated, and with Benefit.—Dr. Frank Grauer said that in his own experience Hale White's dictum was not borne out, and patients could sometimes stand many more than six tappings. He had in mind particularly a case which came under his care in January, 1899. He was seen in consultation by Dr. A. A. Smith, who thought the case a very bad one and expressed the opinion that the man could not live more than three months. He had atrophic cirrhosis and was suffering from diarrhea and marked ascites. At the first tapping 5½ gallons of fluid were withdrawn and some days later, at the second tapping, nearly five gallons more. Later in the year the patient was seen by Dr. E. G. Janeway, who thought he might perhaps live six months longer. Between January, 1899, and December 20, 1900 he was tapped, in all, 21 times, the amount of fluid withdrawn at the different tappings varying from three to five gallons. For nine months after the last tapping there was no return of the ascites. At the end of that time he suffered from an attack apparently brought on by an overindulgence in the pleasures of the table, and died from auto-intoxication.

BOOK REVIEWS.

Radiotherapy and Phototherapy, including Radium and High Frequency Currents, their Medical and Surgical Applications in Diagnosis and Treatment. By Charles Warrenne Allen, Professor of Dermatology in the New York Post-Graduate Medical School, with the cooperation of Milton Franklin, M.D., and Samuel Stern, M.D. Lea Brothers & Company, New York and Philadelphia.

It is a striking illustration of the energy of the mind of the medical man to find no less than five or six large works on radio and light therapy, that have been published in very recent years.

The time had seemed ripe when the general settings of the whole problem had been dimly outlined, and in Dr. Allen's work we think we find for the first time a sense of the perspective of the whole subject of light therapy, as it now appears.

From the practical point of view the practitioner will find an able and thoroughly practical work, not on X-ray work as applied to the diagnosis of disease, but of the whole subject of the physiological and pathological relationship of light energy manifestations.

It can be commended most heartily and Dr. Allen himself should be congratulated on the excellent showing he and the publishers have made of this most fascinating subject.

A Treatise on Bright's Disease and Diabetes. With special reference to Pathology and Therapeutics. By James Tyson, M.D., Professor of Medicine in the University of Pennsylvania, etc. Second Edition, Illustrated. Including a section on the Ocular Changes in Bright's Disease and in Diabetes. By George E. de Schweinitz, M.D., Professor of Ophthalmology, in the University of Pennsylvania. P. Blakiston's Son & Co., Philadelphia.

It is now fully thirteen years since the first edition of this work originally saw the light, and the book has now been out of print for many years. Necessarily, the second edition varies in many very important particulars from the first, for the intervening period has been rich in contributions, especially to the theory of the so-called "Stoff-wechsel" diseases. However, the diagnosis and treatment of renal conditions have considerably amplified and improved. It may be cheerfully conceded that everything of value has been incorporated in this second edition, although the original plan and scope of the work has simply been enlarged to accommodate this new material. It is still characterized by its tendency to seek a pathological basis for the clinical conditions, a standpoint which puts it on an equal footing with the best that is being written in Germany at the present day. The sections on the eye-symptoms are an extremely valuable constituent of the work, and have very properly been entrusted to the hand of a specialist. The therapeutics are simple, yet full, and calculated to meet all the emergencies of this protean disease. The illustrations, with the exception of the colored plates representing pathological conditions of the kidneys, are in general excellent, and the make-up of the book leaves nothing to be desired.

The Doctor's Red Lamp. (The Doctor's Recreation Series. A book of short stories concerning the doctor's daily life, selected by Charles Wells Moulton. The Saalfield Publishing Co., New York, Chicago and Akron, Ohio.

This volume contains a number of very interesting sketches illustrating the physician's many points of contact with life in its various phases. There is the "Doctor of the Old School," by Jan Maclaren, and one of Dr. Conan Doyle's medical stories and Margaret Oliphant's Dr. Barrere, as examples of the familiar, though also as an index of how well selections are made. Physicians and their wives may well pass some very pleasant hours in the reading of these sketches, which are printed on excellent paper, in good, large, untiring type, so that one is tempted to take the book up when other books pall. There are some well reproduced illustrations of incidents in medical life to add to the interest.

Transactions of the American Climatological Association. Vol. xx, 1904.

This volume of transactions contains, as usual, many articles of interest to more than the specialist in climatology. We note among others articles by Dr. J. O. Cobb, of Los Angeles, on "Is Milk a Factor in Tuberculosis," by Dr. Rob't B. Babcock, of Chicago, on "Cases of Pus Infection Simulating Pulmonary Tuberculosis," by Dr. Jno. W. Brannan, of New York, on the "Home Treatment of Tuberculosis by Means of Hospital Dispensaries," and "The Work of the Tuberculosis Clinic of the Health Department of New York City," by Commissioner Darlington.

A Text-Book of Diseases of the Nose and Throat. By D. Braden Kyle, M.D., professor of Laryngology and Rhinology, Jefferson Medical College; Consulting Laryngologist, Rhinologist and Otologist, St. Anges' Hospital, etc. With 175 illustrations, twenty-four of them in colors. Third edition, revised and enlarged. W. B. Saunders & Co., Philadelphia, New York and London.

The third edition of this excellent work presents much new material. Among the alterations and additions those of especial interest are in the chapters on keratosis, epidemic influenza, Gersung's paraffin method for the correction of nasal deformities and the X-ray treatment of carcinoma.

A new departure is the extensive fund of information on the chemistry of the saliva and the nasal secretions and its bearing on diagnosis and treatment. The author's laboratory researches in this department are practically utilized in the discussion of hay-fever, the prognosis of which he regards somewhat more optimistically than many other writers. The discussions accorded to the treatment of each condition are especially valuable and should be of much assistance to the non-specialist on account of their completeness and descriptive detail. Full attention is also accorded to the more purely scientific aspects of the subject and the pathological anatomy of the diseased tissues is well described and illustrated, in many instances by beautifully reproduced colored plates of stained sections.

From every standpoint the book is thoroughly satisfactory and will be found a reliable and practical guide by all classes of readers.

The Summer Diarrheas of Infants, their Etiology, Pathology and Treatment. By H. Illoway, M.D., formerly Professor of Diseases of Children, Cincinnati College of Medicine and Surgery, etc. E. R. Pelton, New York.

The author devotes much space to arguments to prove that the general classification of summer diarrheas is wrong, largely because many of these diarrhea occur also, though much less frequently, in the winter months. He maintains that there are types of diarrhea that are never met with except during the heated months of the year, and to these alone should the term "summer diarrhea" be applied. He calls attention also to the fact that infants almost dying from summer diarrhea, may take a new lease of life from a short outing of a few hours, that no lesions are found in the bowels except in cases of long standing, and that the diseases are non-inflammatory in character. He groups all true summer diarrheas under three heads: Cholera Infantum, Summer Complaint, and Heat Stroke or Thermic Fever. The book is of a size to be easily carried in the pocket. It is to be regretted that the controversial style of the author makes him write as if repeatedly challenging the opinions of his fellows in the pediatric field.

The Mother's Manual. By Evelyn Lincoln Coolidge, M.D. The Woman's Home Library Series. A. S. Barnes & Co., New York.

Although it is probable that, should this little volume be widely read and its precepts put into active practice by mothers and nurses, the pediatrician and the "family doctor" might find their annual income somewhat depleted, it will probably be very well received by the profession, and should be in a fair way to gain the measure of success which it certainly merits. The author writes simply, and the book throughout is unusually free from technical terms; she does not "gush," but on the other hand, the book may be designated, in the best sense of the term, as "popular" without being puerile. Dr. Coolidge is thoroughly at home in her subject, as she already ranks as an authority in matters relating to the care and training of little children, and the good sense and sound advice contained between the covers of this little book ought to lighten the burden of many an anxious young mother, and incidentally secure an overworked physician some much needed nights of unbroken sleep, which would otherwise be disturbed by the frantic message that "there is something the matter with baby, and I don't know what."

Essentials of Nervous Diseases and Insanity: Their Symptoms and Treatment. By John C. Shaw, M.D., late Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital Medical School. Fourth Edition. Thoroughly revised by Smith Ely Jelliffe, Ph.D., M.D., Clinical Assistant, Columbia University, Department of Neurology; Visiting Neurologist, City Hospital, New York. W. B. Saunders & Company, Philadelphia, New York and London.

There is probably no book of the same size, in English at least, which gives such clear cut and definite ideas with regard to the knotty subjects of nervous and mental diseases as does this little Question Compend on the essentials of nervous diseases and insanity. Many a physician who has considered that the problem of learning to differentiate, to some degree at least, these affections, is too complex, will by surprised to find how much can be put in a short space and thus readily learned by means of this little volume.

The fourth edition of the book has been brought thoroughly up to date and noteworthy additions have been made both as regards nervous and mental diseases. There seems no doubt that the work will continue to have, and even to increase the popularity which it has heretofore enjoyed.

Electro-Diagnosis and Electro-Therapeutics. By Dr. Toby Cohn. Translated by Francis A. Scratchley, M.D., Consulting Neurologist to the Home for Incurables. Funk and Wagnalls Company, New York and London.

To all workers in neurology Cohn's work has been a standard for a number of years. Its appearance in English is a matter of congratulation for, while many works on the subject are available, there is hardly one of which it may be said that it is concise and practical. Whether Electrotherapeutics leads to much writing and little thinking or not is a mooted question, but certainly Cohn's work is nearly all meat, very little superfluous padding."

Elements of Water Bacteriology, with Special Reference to Sanitary Water Analysis. By S. O. Prescott, Assistant Professor of Industrial Biology, and Charles E. Winslow, in Massachusetts Institute of Technology. John Wiley & Sons, New York.

So much rubbish is being written about sanitary water analysis that it is a comfort to find a short, sensible treatise like unto the present one. It is, however, very incomplete, and deals only with a few of the organisms of water.

We hope to find that the authors, in a second edition, will give us a larger work, on the order of Frankland, and that they will also include systematic differentials as in Chester's Manual.

INDEX

Abscess, drainage of a prostatic, 1004
of temporal lobe, psychical disturbances with, 234
of the uterus, 24
subdiaphragmatic, 955
subphrenic, 953
versus meningitis, 326
Abscessses, multiple tuberculous, 237
Abdomen, gunshot wound of the, 662
newer methods of opening and closing the, 363
Abdominal section, causes of death after, 36
Academy of Medicine, gift to, 701
Accidents in New York, 129
railroad, 132
Accouchement forcé, relative value of the means and methods employed in, 661
Acid-amides, the occurrence of, in the urine in pathological conditions, 794
Acid intoxications, the, 1182
prussic, the production of, from albumins, 119
Actinomycosis, 1128
Addison's disease, 502, 591
Address, the President's inaugural, 1209
Adenectomy, urgent, 747, 899
Adenoma of the mucous glands of the lips, as a cause of macrocheilia, 191
Adenoid growths anw tendencies to infection, 186
vegetations, remarks on, 659
Adenoids, removal of, 709
sepsis after operation for, 185
Adhesions, granulating wound, 759
Adirondacks, some weather observations, in the, 341
Adolescence, mental disorders of, 809
Adrenalin and liver glycogen, 124
chloride, histological changes produced by, 171
in hemophilia, 556
injections, the influence of subcutaneous, 232
in pulmonary hemorrhage, 557
synthetic, 1132
Aesculapian club, 1188
Agglutinins, 765
Aikin, J. M., cerebral palsies in children, 1259
Aims, our, 643
Ainhum, 1084
Albumin, absorption of foreign, 838
Bence-Jones, 648
determinations, quantitative, 411
Albuminuria, Bence-Jones, 459
essential, 413
functional, 710
Alcohol and children, 1037
content of the organs, the, 26
influence of, on cerebrospinal pressure, 22
the effect of, upon the excretion of uric acid, 646
Alcoholism, chronic, 48
in German schools, 516
the social causes of, 558
Aldrich, Charles J., compressed-air illness, or caisson disease, 1020
Aleppo boil, cause of, 1179
Alexander operation, 859
Alexandra Hospital, Montreal, 1234
Alimentation, subcutaneous, 363
Alkaptonuria, 837
theory of, 987
Allbutt, Dr. Clifford, honorary member of Academy, 752
Allen, Charles Lewis, beginning general paresis, its recognition and management, 348
Alma mater, bequest for, 753
Alopecia areata, etiology of, 78
Alvarenga prize, 894
Amaurosis, hysterical, 189, 190
American Academy of Ophthalmology and Oto-Laryngology, 1140
Academy of Ophthalmology, officers of, 657
Association for the Advancement of Science, 1090
Association of Obstetricians and Gynecologists, the, 227, 660
officers of, 666
Climatological Association, 618
College of Medicine and Surgery, 703
Electrotherapeutic Association, 130
Gynecological Society, 38
Journal of Anatomy, the, 1092
Journal of Urology, 846
Medical Association, the, 42
Medical Editors' Association, 278
Medical Society for the Study of Alcohol and other Narcotics, 372
Neurological Association, 266
Pediatric Society, 810, 855
Proctologic Society, 477
Surgical Association, 35, 87
Amnesia, 720
Amputations, osteoplastic, 392
Anastomosis, gastric and intestinal a mechanical device for, 88
end to end, 1261
gastric and intestinal, use of the segmented ring in, 1261
intestinal, technic for, 1177
lateral, 1275
Anchylosis treated by arthroplasty, 37
Anchylostomiasis, 413
blood in, 73
Andrade, E., some remarks on diphtheria bacilli, 1068
Anemia, diagnosis of, 414
pernicious, 858, 1084
treatment of, 602
Anesthesia, chemistry of, 268
ethyl-bromide, for removal of adenoids, 599
local, in gynecological operations, 24
oxygen and chloroform in, 902
sterile water in the radical treatment of rectal diseases, 478
water, 708
Anesthetization, difficulties in, 951
the difficulties of, and their correction, 1250
the value of oxygen in connection with, 758
Aneurism of the aorta, 92
sacculated, of the aorta, 887
suspicion of, 712
suture of arteriovenous, 233
Angina, a case of Ludwig's, 452
relation of articular rheumatism to, 1227
Vincent's, 412
Angiotribe, the electrothermic, 462
Animal breeding, 1147
cage for laboratory use, 315
enzymology, modern advances in, 1267
house for medical college, 799
organism under the influence of cold, the reducing action of the, 1032
tissues, the elasticity of, 600
Anomalies, effects of facial, 74
Anomaly, congenital, 713
Antimalaria experiment, 852
Antiseptic treatment of the puerperal woman, the, 1258
Antisepsis, internal, 694
intestinal, 526
Antitoxin, free use of, urged, 798
original dose of, 900
success of, 861
Antrum of Highmore, inspection of the, 1180
Anuria due to obstruction of both ureters by calculi, 331
Anus, artificial, in typhoid perforation, 940
Aortitis, syphilitic, 750
Apes, higher, syphilis in the, 650
Aphasia, treatment of, 42
uremic, 365
Aponeurosis, overlapping of the, 761, 1162
Apostoli treatment, the, 164
Appendectomy, 951
clamp and cautery in, 304
Appendicitis, 347
acute drainage in, 6
an atypical case of, 803
and general peritonitis, 609
and inguinal hernia, 174
and pregnancy, 521
a predisposing cause for, 989
an unusual case with many of the symptoms of, 662
proper time to operate for, 235
the medical treatment of, 588
the mortality of, 905
the perilous calms of, 904
the prevention of, 904
treatment of, 519
with perforation of the duodenum, 190
Appendix, stump of the, 1149
vermiform, foreign bodies in the, 1261
vermiformis, the extraperitoneal relations of the, to the posterior surface of the cecum, 116
Appointments, Lying-in Hospital, 370
Appropriations, charitable, this year's in New York, 80
Area, concrete concepts of the human cerebrum, 865
Are we really civilized? 704
Army and Navy Service, 383
medical service, examination for, 31
the way we have in the, 273
Arteries, effect of cold on, 1129
Arteriosclerosis, 574
and athletics, 512
changes of the pancreas in, 648
in nephritis, 750
symptomatology of, 547
Arthritis, 481
deformans, 444
forms of, 224
Arthroplasty, anchylosis treated by, 37
Ascaridiasis of the liver and pancreas, 458
Ascaris in biliary passages, 1227
Asepsis in surgery, 993
some studies in, 35
Ashton, Dr., goes to the university, 1185
Asphyxia, 525
traumatic, 1148
Assaults, to stop, 322
Associated Physicians of Long Island, 525
Asthenopia, 190
Asthma, 856
and its relation to environments, 802
its varieties and treatment, 719
Atelectasis, 525
Athletes at Pennsylvania, examination of, 418
Athletics and arteriosclerosis, 512
and child labor, 713
Atresia hymenalis, congenital, 1195
Atrophy of testis, a case of, 624
progressive muscular, 907
of the thenar eminence, 1240
Atropine, the adaptation of the pupil to the habitual use of, 122
Auenbrugger or Avenbrugger? 1142
Auscultation, transmanual, 762
Auto-intoxication, glimpses of, 761
of gastro-intestinal origin, 353
Auto or the horse—is either safe? the, 564
Azoospermia, diagnosis and treatment of, 509

Babies, no law against selling, 605
Bacilli, typhoid, agglutination of, 24
Bacillus violaceous, Manilæ, 1179
Bacon, Gorham, conservatism in otology, 241
Bacteria, the gradual decrease in, 1146
Bacterial life in the tropics, 957
Bacteriologist, death of a promising, 132
Bacteriology, growth of, 283
specification in, 175
Bacteriuria, 357
Bailey, Pearce, delirium from nervous shock, 385
Balloon, modified Champetier de Ribes, 1195
Banti disease, case of, 939
Barlow's disease, hematuria in, 74
Barnes, Noble P., recent advances in the therapeutics of pediatrics, 492
Basedow's disease, 1129
Basophile granules, origin of, 76
Bassini's operation, modified method of stitching in, 218
Bastedo, W. A., the association of cancer and tuberculosis, 1165
Bathing during menstrual period, 41
ocean, 619
Baths, technic of the, 997
Baum, William L., the silver salts in gonorrhea, 745
Beck, Carl, recent advances in surgery, 1107
honors for, 1231
Beck, Harvey G., a simple and accurate method for estimation of sugar in the urine, 454
Beer, Edwin, intrahepatic cholelithiasis, 202, 244
Bellamy, Dr., injured, 417
Bellevue, big class for, 842
Benzine in poisoning by coal gas, the part played by, 317
Beriberi in port, 276
Beth Israel training school, 177
Bids, almshouse, to be readvertised, 655
Bierhoff, Frederic, a contribution to the study of infections of the prostate from the urethra, 772
Bilharzia disease, blood in, 170
Biliary passages, disinfection of the, 414
secretion, the influence of alcohol on, 231
Bill, Doctor's, $126,000, 1271
Birthday, celebrates 134th, 997
Birth-palsy, case of bronchial, 140, 141
Birthrate, German, 1187
Births of males increase, 843
Bissell, Joseph B., the treatment of tuberculous testicle, 111
Bladder and urethra, calcareous accumulation in the, giving rise to retention, 624
blood vessels in ulcers of the, 926
irritation in girls, 77
papillomata of the, 138
trouble in anilin-workers, 235
Blindness, brain humor with progressive, 46
Blockley Physicians' banquet, 1185
Blood analysis, 761
at high altitudes, changes in the, 173
cells, red, ionic permeability of the, 317
constituents of the, 553
examination in abdominal and pelvic diseases, the, 20
fluids, human, 902
human, forensic identification of, 22
in the feces, significance of, 73
in the feces, test for, 762
in pregnancy, 235
of immunized animals, fat in, 22
platelets and coagulation, 126
platelets in human blood, 991
platelets, origin of, 1035
platelets to coagulation, relation of, 553
pressure, accuracy in measuring, 21
pressure and shock, 851
pressure, diastolic method of measuring, 575
Blood serum in pneumonia, effect of, upon the heart, 231
circulation of the, 422
correction of abnormal conditions of the, 590
influence of repeated external hemorrhages on the general composition of the, 231
vital staining of, 991
Boggs, Russell H., the uses of X-ray in medicine and surgery, 360
Boil, Aleppo, cause of, 1179
Boils, 851
Bolton, Dr., leaves Hartford, 996
Bone passed per rectum, 814
Bonney, S. G., medical education in Colorado, 1
Books received, 96, 144, 192, 240, 288, 576, 624, 672, 768, 816, 864, 912, 960, 1008
Boric acid in food, 31
in therapeutics, 1096
poisoning, fatal case of, 648
Boston bequests, 704
items, 657
Medical Library Society, 1189
societies, 1047
Boston's great opportunity, 1188
Bothriocephalus infections, a specific precipitin reaction in, 994
specific precipitin reaction for, 318
Brace, a new, for the shoulder-joint, 160
Brain abscess of otitic origin, 903
and sex, 607
and sinus diseases, 520
localization of macula lutea in, 23
tumor and trauma, 851
Brannan, John W., home treatment of tuberculosis by means of hospital dispensaries, 577
Bray, H. A., diagnosis and treatment of internal hemorrhoids, 14
Breast, Roentgen treatment for, 1131
the treatment of malignant diseases of the, 718
Breathing in high altitudes, 516
Breeding, animal, 1147
Briggs, C. E., the extraperitoneal relations of the appendix vermiformis to the posterior surface of the cecum, 116
Bright's disease, 919
chronic, 528
in Chicago, 799
chronic, medical aspects of decapsulation of the kidneys for, 122
newer conceptions of the management of, 809
on the phloridzin test in, 230
the management of, 845
British Columbia Medical examinations, 1044
Medical Association, the, 228, 280, 326, 383, 426, 478, 526, 566, 763, 908
Medical Association — section on laryngology and otology, 1277
Medical Association — section on medicine, 1198, 1278
Medical Association—section on psychological medicine, 1005, 1196
Medical Association — section on State medicine, 670
Medical Association — section on tropical medicine, 615, 852
Bronchitis, fibrinous, 459
Bronchopneumonia in childhood, 1180
primary, 1278
Bronx typhoid, 466
Brooks, Harlow, the pathological anatomy of gastric ulcer, 677
Brown, Lawrason, some weather observations in the Adirondacks, 341
Brown, Lawrason, the early physical signs of pulmonary tuberculosis, 721
Bubonic plague, 1090
Buerger, Leo, a new method for staining the capsules of bacteria: preliminary communication, 1117
Buildings, new, at Dunning, 323
Bullard, Dr. W. E., removal of, 892
Bullets, dum-dum, 1201
Bullock, E. S., report of the medical director of St. Joseph's sanatorium to the advisory board, 963
Butler, Dr. George F., 1043
"Button button," 274
Byles, F. Gilett, therapeutic value of Colorado climate, 1015
Byways of medical literature,—XXII, 420.

Cabot, Dr., appointment of, 562
Cæsarean section, 852
Caffeine, the effect of, upon the vagus center, 793
Caisson disease, 1020
Calcareous accumulation in the bladder and urethra, 624
Calculi, salivary, 804
Canadian Medical Association, 606
Medical Protective Association, 657
Canal, drainage, Illinois state board of health report on, 322
Canals, removal of the semicircular, 218
Cancer and appendicitis, the death-rate from, 897
and tuberculosis, the association of, 1165
Commission, Harvard, 880
etiology again, 223
gastric, early diagnosis of, 411
Cancer, gastric, hyperacidity in, 414
hospital receives charter, 997
hospital, site secured for, 1185
new theory of, 268
of the larynx, 1127
of the rectum, the present status of the treatment of, 477
of stomach, peculiar course of, 509
of the stomach and rectum, 235
research, 131-227
the biological interpretation of, 343
the spontaneous cure of, 599
the transmissibility of, 270
Candy and microbes, 26
Canfield, R. B., the application of conservative and radical surgery to chronic nasal accessory sinus disease, 100
Canonsburg Medical Club, the, 1233
Canteen, the, 801
Capsular stain, a new, 1267
Carbolic acid sale stopped, 563
Carbon monoxide, the behavior of, in the organism, 173
the use of bisulphide of, 753
Carcinoma by implantation, 233
of the breast in a cat, 551
of the breast, radical operation for, 805
of the cheek, 237
of the prostate, an inoperable case of, 666
resection of the stomach and transverse colon for, 758
Roentgen therapy in, 233
Cardiac disturbance, 46
nerves, physiology of, 621
Caries, spinal, modern methods for combating deformity in, 719
Carlson, Dr., appointment of, 1043
Carlton, Edward P., two old friends: castor oil and salts, 694
Carnegie Institute, new president of the, 1235
Carotid body, 1036
Carter, Henry R., the conveyance of yellow fever, 878
Carter, Herbert Swift, the contribution to cytodiagnosis in pleural effusions, with especial reference to the tuberculous form, 629
Carter, William S., the consumption and elimination of water in dry and moist climates, with special reference to the cause of Bright's disease, 919
Castor oil and salts, 694
Castration, the influence of upon the thymus, 267
Catarrh, middle-ear, 1277
Catheter and observation cystoscope, a combined, 667
life a thing of the past, is? 128
Catheterization, aseptic, 406
Cauda equina lesions, 326
Caught red-handed, 751
Cecum and appendix, the function of the, 1033
Cellulose in feces, estimation of, 622
Cephalhematoma, 525
Census returns, 29
Cerebrospinal pressure, influence of alcohol on, 22
Cervical rib, X-ray of, 191
Cervix, fifth day repair of the, 1099
suture, the practice of, 38
uteri, primary repair of lacerations of the, 38
Chandler, Swithin, puerperal sepsis, 260
Chapin, Dr., reception to, 1137
to honor, 563
Charity hospitals, gifts to, 798
Chart, a blood pressure, 390
Chemistry and medicine, 420
physical, of drug treatment, 380
Chemists, convention of, 466
Chemotaxis, protoplasms of, reaction of, 460
Cheney, William Fitch, report of a case of splenomedullary leucemia treated for nine months by the X-ray, 873
Chestnut Hill Hospital opened, 703
Children, disease in, 1153
Children's Hospital staff, 1270
Cholecystitis, 520
Choledochus, removal of stones in the, 233
Cholelithiasis, intrahepatic, 202
Cholera epidemic in Asia, 131
epidemic in Persia, 179
in Russia, 371
Chloroform and vaccine virus, 1134
to blood, the physical relation of, 1033
Chloroma, a new case of, 971, 1025, 1078, 1118

Chlorosis, metabolism in, 221
Chorea and eye strain, 188
hereditary, 496
insaniens, 1051
Chorio-epithelioma, 1043
Chicago Academy of Medicine, 471-1051
County hospital, 1186
Day at the Louisiana Purchase Exposition, 606
Gynecological Society, 894
hospitals, 83
Lying-in Hospital, annual report of, 1234
Lying-in institution and dispensary, 1186
Medical Society, 799, 1238
Medical Society, work of the medico-legal committee of the, 1186
men win medal, 946
milk, 178
Orthopedic Society, 1090, 1192
Pediatric Society, 894
Surgical Society, 190, 237
Child labor and athletics, 712
Children and alcohol, 1037
cerebral palsies in, 1259
crippled and deformed, 1138
taking care of the, 226
Children's aid, work of, 178
Hospital Aid Society, officers and directors, 178
hospital, work of, under consideration, 1186
Chinese made easy, 330
Christian Science as a disease spreader, 1060
Chromidrosis, bacteriology of, 508
Cicatrization—blood vessels in ulcers of the bladder, 926
Circulation, intra-ocular, and intra-ocular pressure, 601
Civil Service Commission, State, 1042
examinations, 994
examination in Cook County Hospital, injunction against, 1043
Cirrhosis, hepatic, 1281
biliary, 1147
hypertrophic, 1281
of the liver, 763, 1147, 1280
statistics of, 1281
syphilitic, 1282
City's power to protect itself, 1185
Claiborne, J. H., and E. B. Coburn, experiments to determine the value of collargolum and anti-streptococcic serum in infected wounds of the eye, 258
Claiborne, J. H., and Edward B. Coburn, tyohimbin; its use in the treatment of eye, ear, nose and throat diseases, 61
Claudication, intermittent, 172, 1069
Climate, Colorado, therapeutic value of, 1015
Climatology as a study in the medical schools, 618
Clothing as physical records, 131
Clubfoot, 990
Coagula, fibrinous, upon placental surface of chorion, 750
Coagulation and blood platelets, 126
time of blood, effect of drugs on the, 22
Coblentz, Virgil, endermol, a new vehicle for ointments, 453
Cocaine danger, the, 564
disadvantages of, 708
Cocainism, 115
Coe, John W., report of a case of ruptured ectopic gestation, 289
Cole, Carter S., personal experience in the treatment of typhoid fever, 155
Colitis, chronic, treatment of, 555
the treatment of chronic, 886
Colargolum and antistreptococcic serum, the value of, in infected wounds of the eye, 259
Collecting, good mode of, 285, 286
College graduates in medicine, 1181
of Physicians and Surgeons, 605, 1233
reopens, 701
Collins, Howard D., technical errors in the use of rubber gloves, 337
Colloids and ions, 928
Colon bacillus, chronic infection and subinfection by the, 271
Colon, movements of the, 316
Colorado, medical education in, 1
Color reaction for sugar, a new, 1035
Colotomy, control of colon hemorrhage by left-sided, 123
Columbia, honors at, 892
pharmacy degrees, 1269
University, 654
Columbia's opening exercises, 605
Coma, diabetic, carbon dioxide in the blood in, 600
new eye-symptom of diabetic, 622
Complement, some observations on, 181
Conception and perception, centers of, 190
Conduct unprofessional, 1043
Congo (sleeping) sickness, *trypanosoma gambiense*, 616
Congress of Arts and Sciences, medical department of, at St. Louis, 30
of Internal Medicine, 574-621
Conjunctiva, diseases of, 569
Connell, F. Gregory, the etiology of gastric hemorrhage, 823
Constipation, anatomical causes of, 714
education, against, 714
in women, 714
treatment of, by olive oil, 940
Consumption, another infallible cure for, 132
hereditary? is, 845
labor unions to join fight against the spread of, 1233
lessen spread of, 999
of spirits in Canada, 846
the public house a source of, 132
war on, 324
Consumptives in Ontario, central hospitals for, 1044
levy tax for, 1271
national Jewish hospital for, 324
Contagious diseases, inspector of, in the Bronx, 562
Contagiousness, possible, 710
Convalescence, prolongation of, 653
Cook County Hospital, physicians for work at, 1234
Cooper, C. M., remarkable pulse tracing, 280
Copper as a typhoid germicide, 470
treatment of drinking water, 514, 1227
versus typhoid, 843
Cornea, foreign bodies in the, 904
Cornell University Medical College, 605
Coroner system defended, 702
Corydalis, alkaloids of, 168
County Medical Association, 945
Medical Society, special lectures for, 946, 1137
Craig Colony experience, 188
Craig, Frank A., diagnosis of advanced tuberculosis, 546
Cranial cells, the resuscitation of the, 554
Creosotal, the use of, 378
Crepitus from the scapula, 219
Crime among the colored race, 32
Criminals, luxury for—who pays for it? 1006
Cripples, new buildings for, 277
Crisis, gastric and intestinal, 1084
Croftan, Dr., appointment of, 178
Cryoscopy of exudations, 186
Cullen, Dr., addresses Society, 946
Curette in acne, the, 708
Curie, Mme., 950
Currents, high-frequency, 438
Curtis, B. Farquhar, and Francis C. Wood, chronic mastitis and diffuse fibro-adenoma of the breast, 294
Cutler, Colman W., migraine and sick headache, 194
Colman, W., symmetrical enlargement of parotid and lacrimal glands; nodular iritis, 1160
Cyclaster scarlatinalis, Mallory's, in the skin of scarlet fever patients, 183
Cyst, benign bone, 235
ovarian, report of a case of, 715
pancreatic, 864
Cystinuria, 48
Cystoscopes designed for different purposes, 332
Cystotomy, suprapubic, 138
Cysts, vaginal, the origin of, 24
Cystitis, tuberculous, 955
Cytodiagnosis, cerebrospinal, 1087
in nervous disease, 649
in pleural effusions, with especial reference to the tuberculous form, a contribution to, 620

DAIRY inspection, 226
Daley, Robert M., primary myokymia, with report of a case, 12.
Dana, Charles L., eye-strain and the psychoses, 193
Dartmouth Medical School, 657
David, Edward P., the immediate repair of the pelvic floor and perineum, 1105
Davis, Dr. Nathan Smith, memorial services in honor of, 894
will of, 277
Davis, Dr. William Elias B., statue to, 82
Dawson, a visitor from, 948
Dearborn Medical College, commencement exercises of, 83
opening exercises of, 515
Death among aboriginal peoples, causes of, 525
report, semi-annual, 130
Decapsulation, renal, clinical, experience with, 558
Decortication, experience with, 234
Deformity, two cases of congenital, 44
Degeneracy, racial, and American progress, 79
Degeneration, myocardial, 762
what is it? 1196
Delano, Miss, acting superintendent of the city hospitals, 28
Delirium, hysterical, 46
Dementia præcox, 907, 1197, 1243
Demineralization and tuberculosis, 172
Dental corps in army, ask for, 799
disease of the navy, 670
school, free service of, 1138
Dentition and epilepsy, 177, 1111
Depression instead of melancholia, 1240
Dermatitis coccidioides, 510
of the hand after use of X-ray, 886
Desquamation, the treatment of, 378
Deterioration, physical, of the English, 420
Drew, Dr., wins suit, 1041
Diabetes, Cheyne-Stokes breathing in, 459
effect of different proteids on, 622
insipidus treated by strychnine injections, 554
notes on, 1226
pancreas-hemoglobin muscle extracts in, 122
the acetone bodies in, 805
transitory, an instance of, 510
treatment of insipid, 838
Diaphysis of, osteoplastic repair of the entire, 234
Diarrhea in children, the etiology of summer, 814
summer, heat exhaustion, and, 415
Diarrheas, prevention of summer, 814
summer, 1245
Diathesis, phosphatic, a case of obstinate, 644
Diazo reaction, chemistry of the, 622
Dido, a modern, 176
Dietary, naval, 384
Diet for the tropics, 959
Digitalin, chemical detection of, 73
Digitalis, action of, 622
dilatation of the right heart by, 937
Dilation, acute gastric, 851
Diphtheria and milk, 567
and radium rays, 565
antitoxin in, 860
antitoxin, the preparation of, 949
bacilli, 1068
chronic, 121
complications of, 976
in Newark, 607
in Trenton, 800
in the Bronx, 513
serum therapy practical, 839
Diplegia, case of spastic, 44
Diplococcus intracellularis in otitis, 710
Dipsomania and its treatment, 264
Disease, malignant, treatment of, 954
pelvic, relation of appendix to, 413
pulmonary, the district nurse in her relation to, 785
Diseases, abdominal and pelvic, blood examination in, 20
Disinfection of houses, 371
of the biliary passages, 414
Distomiasis, 48
pulmonary, 236
Diverticulum, Meckel's, 989
Dock, George, and Aldred Scott Warthin, a new case of chloroma with leucemia, with a study of cases reported since 1893, 971, 1025, 1078, 1118
Doctor returns, supposed dead, 419
Doctors and their fees, 132, 228
income of the future, the, 566
to meet in Denver, 130
Dold, Dr., goes to Falkirk, 892
Dominion registration, 657
Donations for institutions, 703
Donovan, John A., treatment of acute middle-ear disease, 532
"Don't you hear the baby cry?" (Massachusetts race problem)?
Douglas, Charles J., cocainism, 115
Douglas Memorial Hospital, 83
"Dowieism," 277

Drainage in acute appendicitis, 6
railroad and house, 572
Dreyer's uethod in phototherapy, therapeutic value ot, 556
Drug babits, 45
(substitute) poisoners, 1234
Drugs, fight for pure, 1233
inhalation of, 621
vs. other methods of treatment, 719
Druggists, sale of liquors by, 177
Ducts, liver and gall, five operations on, 233
Ductus thyroglossus, cysts of the, 237
Dukeman, William H., treatment of lobar pneumonia in the adult, 108
Dunning, Dr., retires, 1232
Dysentery, 236
a new curative serum for, 167
bacillus, immunization of the, 47
rare complications of, 459
the treatment of, 650
Dyspnea, 857
treatment of, 1084
Dystocia, simple, conservatism versus early intervention in, 801

Ear drum, rupture of the, by lightning, 1179
external researches on temperature of the, 1179
Earles, Dr., dinner to, 226
Eastern Medical Society, the, 654, 752, 819, 945, 1088, 1231
Echinacbea, 810
Eclampsia, 272
in new-born twins, 1194
puerperal, and recent progress, 652
puerperal, urea in, 164
puerperal, vaginal Cæsarean section in grave cases of, 661
treatment of, 78
Eczema, etiology of, 838
Eddyism and magnetic healing, 511

Editorial—
Acid intoxications, the, 1182
Animal enzymology, 1267
Army, the way we have in the, 273
Arteriosclerosis and athletics, 512
Artbritis, forms of, 224
Asepsis in surgery, 993
Athletics and arteriosclerosis, 512
Bacteriology, specificity in, 175
Bothriocephalus infections, a specific precipitin reaction in, 994
" Button, button," 274
Cancer etiology again, 223
Candy and microbes, 26
Capsular stain, a new, 1267
Carcinoma of the stomach, serum diagnosis of, 890
Caught red-handed, 751
College graduates in medicine, 1181
Convalescence, prolongation of, 653
Degeneracy, racial, and American progress, 79
Diarrhea, summer, beat exhaustion and, 415
Dido, a modern, 176
Diphtheria serum therapy, practical, 839
" Don't you hear the baby cry?" (Massachusetts race problem), 942
Eclampsia, puerperal, and recent progress, 652
Eddyism and magnetic healing, 511
Editorial record, the longest, 369
Enzymology, animal, 1267
Erysipelas: a muddle, 1133
Fever, typhoid, recent advances in, 995
Food preservatives and adulterants, 1087
" From youth to hoary age," 465
Graft, medical, 80
Graves' disease, present position of, 603
Harvard Cancer Commission, the third annual report of the, 889
Heart and aorta in congenital syphilitics, the, 751
Immortality, Dr. Osler on, 840
Intoxications, the acid, 1181
Is catheter life a thing of the past? 128
Jesting, some medical, 1231
Laboratories, summer, 127
Leucemia, X-ray treatment of, 464
Locomotor ataxia, the urinary disturbances in, 561
Malaria, the prophylaxis of, 651
Meninges in the acute infections of the respiratory system in children, the, 513
Meningitis, cerebrospinal, epidemic, 368
Men of science, 1135
Microbes and candy, 26
New York State Medical Association meeting, 797
Orient, a lesson from the, 795
Osler, Dr., on immortality, 840
Oxidases, the rôle of the, in the animal economy, 1230
Peritonitis, pneumococcus, 1183
Piroplasmosis, 700
Pneumococcus peritonitis, 1183
Pneumonia once more, 891
Pregnancy, hepatic disease in, 560
Prentice, the unveiling of, 1040
Prevention, an ounce of, and the pound of cure, 559
Prophylaxis of Fourth of July tetanus, 25
Radium, recent studies on, 415
Reed, Walter, and the Panama Sanitary outlook, 463
Sanitary aspects of the rapid transit subway, 941
Sbrady, Dr. George F., 319
Specificity in bacteriology, 175
Stain, a new capsular, 1267
Streets of New York, the, 69
Subway, sanitary aspects of the rapid transit, 941
Summer laboratories, 127
Surgery, prostatic, progress in, 1039
Syphilitics, congenital, the heart and aorta in, 751
Tetanus, prophylaxis of fourth-of-July, 25
Texan wellspring of pleasure, a, 416
Tooth-brush, with the help of a, 841
Tuberculosis, infection in, 319
an appeal for aid in the fight against, 1229
Ulcer of the duodenum, 604
Urine, the segregation of, 367
Vaccine virus and chloroform, 1134
Wood alcohol, 796
X-ray treatment of leucemia, 464

Education and race suicide, 179
medical, in Colorado, 1
Effusion, pleural, tuberculous, 1198
Einborn, Max, symptomatology and course of gastric ulcer, 691
Elasticity of animal tissues, the, 600
Electrical accident, peculiar, 1092
Eliot, Ellsworth, Jr., hepatoptosis complicated by gastroptosis; a suggestion as to treatment, 913
Elliott, Arthur R., bacteriuria, with special reference to coli bacilluria, 357
Ely, Leonard W., a new brace for the shoulder joint, 160
Emaciation, a factor in the causation of, in tuberculosis of the lungs, 739
Embolism, coronary, 953
pulmonary, 36
Emley, S. C., the correction of abnormal conditions of the blood relative to surgical operations, 590
Empyema, 101
metapneumonic, 190
Endermol, a new vehicle for ointments, 453
Endocarditis, malignant, 953
Endothelioma of pleura, primary, 76
Endothelium, peritoneal, 610
Endowment, increased, 29
Enteritis, pseudo-ascites after chronic, 210
Entero-anastomosis, experimental studies on, 218
Enteroliths, appendiceal, 374
Enterostomy, 1276
Enzymes, proteolytic, the combined action of, 647
Enzymology, animal, modern advances in, 1267
Epididymitis, double, 710
Epilepsy and dentition, 177
autopsy findings in, 46
borax in the treatment of, 272
chorea, etc., the relation of, to eye disease, 197
to study, 949
Epileptic Colony fakirs, 1044
Epinephrin, 1147
Episcopal hospital, 946
Epithelioma, primary of the bronchus, 93
Erythemia exudatiom, the gastro-intestinal crisis of, 506
Erythemata, etiology of toxic, 937
Erythromelalgia, 365
a case of, 737
Erysipelas: a muddle, 1133
nitroglycerin in, 1132
Escharotics, effect of, on the endometrium, 166
Esophageal glands, 553
Esophagojejunostomy, antethoracic, 124
Esophagus, foreign bodies in the, 862
stenosis of the lower portion of the, 946
Ether, malingery revealed by the use of, 969
" Eugenics," 33
Evans, T. H., paratyphoid: a case of the hemorrhagic variety, 446
Examinations, Health Department, 418
at P. & S., no mid-year, 1184
Exanthemata, mercurial, 78
Exclusion, intestinal, 989
Excursions in old New York medicine,—V, 517
Exhaustion, nervous, in infants, 813
Exophthalmos, on the mechanism of, 732
Exostoses, multiple, 1103
symmetrical, of the scapboid, 269
Eye and Ear Hospital, bequest to, 513
Eye, carbolic acid and ammonia burns of the, 850
Eye lesions, early recognition of important, 809
symptoms of hysteria, the, 200
the accomodation of the, 1143
Eye-strain and inebriety, 452
and mental disturbances, 187
and the psychoses, 193.
as a causative factor in sinusitis, 1038

Faps, medical, popular, 130
Fairbanks, Arthur Willard, the district nurse, in her relation to cases of pulmonary disease, 785
Fair for Nassau Hospital, 470
Fallopian tube, torsion of the, 366
Famine threatened in Ireland, 1234
Fasting and feeding, metabolism in, 600
prolonged, in the treatment of acute diseases, 805
Fatigue, muscular, the relation of adrenalin to, 600
Fat in blood of immunized animals, 22
in pigments, 495
sugar from, origin of, 22
Fats in infants, the absorption of, 555
Feces, significance of blood in the, 73
Fees, division of, 844
doctors and their, 132
professorship, in Germany, 658
Femur, extensive osteomyelitis of, 1192
fracture of the neck of the, 584
to the pelvis, the relationship of the, 719
Fermentation experiments, 125
Ferments, contribution to the knowledge of, 646
Fetus, ectopic, removal of skeleton of, by vaginal cystotomy, 664
Fever, contagiousness of typhoid, 519
during labor, significance of, 366
enteric, 961
hay, local use of quinine in, 888
hay, recent investigations in, 510
hay, treatment of, 166
heat regulation in, 125
influence of, upon various diseases, 622
puerperal, changes in corpuscles of the blood in, 413
scarlet, bacteriological study of the throat in, 1036
scarlet, diphtheria anti-toxin, 380
scarlet, discussion on the treatment of, 377, 378, 379, 380
scarlet, the treatment of, with the Moser antistreptococcus serum, 817
scarlet, treatment of, 1000
scarlet, eurotropin in, 406
the heart in scarlet, 902
trypanosoma, 526
typhoid, 1050
typhoid, a case of, with repeated chills, 820
typhoid, intestinal perforation occnrring in, 851
typhoid in Winnipeg, 846
typhoid, observations on food in, 849
typhoid, personal experience in the treatment of, 155
typhoid, rational treatment for, 71
typhoid, recent advances in, 995
typhoid, Widal reaction in the diagnosis of, 371
yellow, denied, 1090
yellow, the conveyance of, 878
Fevers, malarial, 478
Fibrin, the absorption of, 893
Fibro-adenoma, diffuse, of the breast, 294
Fibroid, large uterine, 713
Fibroma of the periosteum, 237
Fibromyomata, uterine, complications and degenerations of, 170
Fibromyxosarcoma of the sacrum treated by cataphoresis, 558
Filtration plant, Pittsburg to build, 467
Finalities, some fallacies in, 478
Fined $100, 709
Finsen method, the, 1255

Fischer, Louis, complications of diphtheria; with suggestions for the feeding, medicinal and hygienic treatment, 976
Fissure in ano, 521, 905
Fistula in ano, diagnosis and treatment of, 239
simple rectal, treatment, 477, 640
Fixing the blame, 563
Flatfoot, 859
Flexner, Dr., lecture by, 1184
Fluid, cerebrospinal examination of the, in nervous diseases, 364
chylous hydrocele, 1003
Fluorescent substances, action of, on bacteria, 270
substances, oxidizing action of, 838
Fluorescing substances, action of, on toxins, 76
Fly, the infecting agent, a, 527
Food adulteration prosecutions, 83
boric acid in, 31
cold storage tests for, 999
dangers of preserves, 1097
law, new pure, being prepared, 277
preservative, sodium sulphite a dangerous, 168
preservatives and adulterants, 1087
preservatives, symposium on, 1270
preservatives, the relation of, to the public health, 1185
Foods, preservatives in, 1093
Foodstuffs, analysis of, in New York, 513
Force, psychic, 45
Formaldehyde and calcium chloride, the effect of on the hemolytic power of serum, 1032
in milk, 556
Formalin in milk, 1097
Fourth-of-July casualties, to prevent, 29
Fowler, George Ryerson, the alleged use of dum-dum bullets in the Japanese-Russian war, 1201
Fracture of the neck of the femur, 584, 988
Fractures, moot points in the treatment of, 309
of the neck of the femur, the union of ununited by open operation, 237
the care of, 1115
tratment of, 174
Franklin, Milton, the Finsen method, 1255
Frauds, the drug, 756
Frazier, Dr., elected to Episcopal Hospital, 1068
French doctors, congress of, 84
Hospital open, 996
"From youth to hoary age," 465
Funiculitis, 624
a case of, 138
Fussell, M. H., H. S. Carmany, and H. Hudson, polyuria in typhoid fever, 529
Futcher, Thomas B., the condition of the blood and urine in gastric ulcer, 675

GALL-BLADDER, new formation of, 233
various operations on the, 903
Gall-stone disease, 1276
Gall-stones in the common bile duct, 90
Ganglia, sensory, the pathology of the cells of the, 649
Gangrene, embolic, after pneumonia, 413
following intussusception, 1275
of the lung, pulsating, 1035
spontaneous, 888
Gastrectomy, 236
Gastric disorders, 1096
Gastritis, erosive, 998
Gastro-enteritis, influential, 340
Gastro-enterostomy, posterior, 36, 748
Gastroptosia, 110
Gastroptosis, 240
Gastrostomy for esophageal stricture, 89
Gastrotomy, osteoplastic, 821
General Medical Council, the, 228
Genius and electricity, 704
Georgia tuberculosis commission, 564
German birthrate, 1187
Hospital, 1088
Surgical Society, the, 233
Germantown Hospital, 130
Germany and medical practice, 314
Gestation, ectopic, etiology of, 903
ruptured ectopic, a case of, 289
Gheel, a visit to, 151
Gingivitis, interstitial, 339
Given, Frank I., a case of pneumomelanosis, 987
Glanders, pyemic, in the human subject, 315
Glands, lacrimal and salivary, nature of symmetrical disease of, 76
parotid and lacrimal, 1160
Gland, thyroid, removal of one-half, 20
Gloves, rubber, a substitute for, 804
rubber, technical errors in the use of, 337
Glycocoll, the fate of, intravenously injected, 793
Glycogen, reaction in blood, the, 169
Glycosuria, case of, 1130
Glycuronic acid in man, the formation of 1035
Goiter, exophthalmic, 990
exophthalmic, thyroidectomy for, 90
in Pennsylvania, 1233
lingual, 698
Gonorrhea, silver salts, 471, 745
the treatment of, 42
treatment of acute, 486, 535
Goodrich, W. W., comparative progress of medicine and law, 433
Gordon, Alfred, transition of obsessions to delusions; with report of two cases, 306
Gout, action of alkalies on, 167
and its treatment, 481
and lithemia, deficient urea excretion in, 21
infective element in, 460
therapeutics of, 940
Gouverneur physician exonerated, 417
Graft, medical, 80
Grandin, Egbert H., race suicide from the gynecological standpoint, 51
Graves's disease, diagnosis of, 810
disease, present positon of, 603
Greenwood, James, tuberculosis in our public institutions, 927
Gross, the Samuel D., prize, 1089
Gunshot wound of the abdomen, 662

HAGGARD, W. D., pancreatis, 1061
Hall, A. J., the medical treatment of appendicitis, 588
Hall, J. N., internal antisepsis, 694
Hallux valgus, 1103
Hamilton, Ont., hospital, new wing for, 846
"Hans" (clever) now a telepathist or muscle reader, 1188
Hanot's cirrhosis, 1147
Harris, C. M., a case of Ludwig's angina, 452
Harris, Thomas J., the submerged tonsil. 66
Harrison, W. G., observations on the blood and circulation in uncinariasis, 641
Hartford hospital gets $500,000, 736
Harvard Cancer Commission, third annual report of, 889
medical graduates, 84
Medical Society of New York City, 185, 380, 710, 996
Harvard's new buildings, 84, 1138
Hatfield, Charles J., history-taking in cases of pulmonary tuberculosis, 550
Hay-fever epidemic, 515
Hays, Harold M., a factor in the causation of emaciation in tuberculosis of the lungs, 739
Headache and eye-strain, 188
gouty, 1132
Healing, magnetic, Eddyism, and, 511
Health Board dairy inspection, 1089
Department funds, 513
Department, increased help for, 946
drifters, 948
laws, improved, for the State, 1270
Heart action, influence of cold on, 21
action, studies on the, 576
and aorta in congenital sypbilitics, the, 751
case of displaced, 814
determining size of, 575
disease, mechanical treatment of, 620
disease, morphine in, 558
foreign body in the, 509
new method of testing the, 172
Heat, latent, 186
regulation and death temperatures, 271
Heatherside sanatorium, the, 132
Helmitol and urotropin, 649
Hemagglutinins, the question of, 794
Hematemesis, treatment of, 886
Hematology, practical, the use of absorbent papers in the service of, 776
Hematoma, intrapelvic, 38
Hematuria in Barlow's disease, 74
Hemiatrophy, hilateral facial, 1244
renal, of unexplained origin, 1206
Hemiplegia, 43
bitemporal, 1128
Hemoglobin estimation of blood, 75
estimation with Tallqvist scale, 458
in chronic heart disease, 75
Hemoglobinuria, experimental, 992
paroxysmal, 837
Hemolysis, 621
caused by cancer extract, 509
Hemolysins and agglutinins, the production of, by the stromata and liquid of laked corpuscles, 222
Hemorrhage, control of colon, by left-sided colotomy, 123
gastric, due to aneurism, 172
gastric, the etiology of, 823
influence of external on proteid catabolism, 317
in labor, 556
internal from ectopic gestation without rupture of the sac, 431
intraperitoneal, 94
prolonged capillary, 36
pulmonary, adrenalin in, 557
treatment of medical, 940
Hemorrhoids, 1132
internal, 14
internal and external, 238
internal, the removal of, 760
operation for, 951
treatment of, 556
teatment of, by oscillatory currents of high tension, 557
Hemostatic, a new, obtained from the spleen, 168
Hepatoptosis, 913
Hermaphroditism, true, 713
Hernia, age for operation, 901
double inguinal and femoral, 710
inguinal, and appendicitis, 174
radical cure of, 862
radical cure of, in children, 901
rectal, 715
strangulated umbilical, 665
twenty-five cases of strangulated, 1215
ventral, advantage of muscle splitting and muscle retraction incisions in the prevention of, 1238
Hernias, treatment of, 235
Hinsdale, Guy, the climate and waters of Hot Springs, Va., 778
Hip-joint, gunshot wound in the, 665
Hips, treatment of congenital, 954
Hirshberg, Leonard K., pseudo-bulbar (glosso-pharyngo-labial) paralysis, 68
Hodgkin's disease, a case simulating, 183
Hodgson's disease, 713
Holden, Ward A., the eye symptoms of hysteria, neurasthenia and the traumatic neuroses, 200
Home study hours lessened, 563
for destitute crippled children, 1271
Honor of noted physicians, tablets in, 29
Hopkins, S. D., intracerebral injections of antitetanic serum in traumatic tetanus, 1125
Hosack, Dr. David, and his botanical garden, 517
Hospital construction, 862
for children, 178
for Oak Park, 514
for Queens beaches, 80
for the Treatment of Cancer, 226
fund, to aid, 1233
model field, 179
new, for Brooklyn, 513
new, for Chicago, 1187
new, for Englewood, 514
new, for Orange, 324
of the past, a, 469
patients alarmed in a queer way, 605
Saturday in Vancouver, B. C., 800, 846
trains, Russian, 227
Hospitals, five millions for, 324
government needs, 800
inspect new, 1138
Hotchkiss, Lucius Wales, a consideration of the question of drainage in cases of acute appendicitis with spreading peritonitis, 6
Hot Springs, Va., the climate and waters of, 778
Howard, Campbell P., the incidence of gastric ulcer in America, 673
Howard, Dr. Henry William, appointment of, 1187
Howard, William Lee, dipsomania and its treatment, 264
Howard's (Dr.) joke on the President, 1235
Howland, John, a case of typhoid fever with repeated chills, 820
Huber, John B., races and peoples with regard to tuberculosis, 917
Hughes, Dr., tablet to, unveiled, 1270
Hydatid, primary, of the Fallopian tube, 461
Hydrargyrum anilinicum, 167
Hydrocele, cytology of, 888
Hydrocephalus, 47
treatment of, 555
Hydronephronia, cystic, 1002

Hydrophobia, vaccination in, 419
Hydrotherapy in nervous diseases, 808
nasal, 650
Hygiene congress, 754
in elementary schools, 567
in the hairdresser's shop, 33
laundry, 1065
rural, 284
Hyperacidity and its treatment, 414
treatment of, 622
Hyperalgesia, cervical zones of, after cerebral injuries, 19
Hyperglobulia, peripheral, the causes of, at high altitudes, 173
Hypertrophy, congenital, and dilatation of the colon, 412
general cardiac, 712
Hypnotic, a new, 888
Hypnotics, the rectal administration of the newer, 588
Hypnotism and drunkenness, 279
Hypoleucocytosis in typhoid, 20
Hypophysis, injuries of the, 234
Hysterectomy, the after-effects of, 759
and the general health, 1215
on the sexual function, the effect of, 1249
Hysteria and the eye, 188
major, the diagnosis of, 719

ICTERUS, agglutination with, 647
congenital, with splenic tumor, 1227
Ideal house described, 1233
Ileus of syphilitic origin, 235
the question of auto-intoxication in, 508
Illegal practitioner, first conviction of, 83
Illinois county regulations, 896
Medical College, commencement exercises of, 703
State Board of Health wins medal, 946
State Medical Society, 519
Illness, compressed air, 1020
Immortality, Dr. Osler on, 840
Immunity against streptococci, 553
natural, the influence of alcohol, ether and chloroform on, 272
to poisons, the non-transmission of acquired, 590
Implantation of the human ovum in the uterus, the, 41
Improvements at hospitals, 177
Impulses, irresistible, 1007
Income, the doctors of the future, 566
Indicanuria complicating typhoid, 718
Inebriate Reform Society of Ontario, 1044
Inebriates in Ontario, the care of, 656
should they be punished by death for crime? 45
Inebriety and eye-strain, 452
loss of consciousness and automatism in, 806
Infant feeding and milk modification, 923
feeding, difficult cases of, 304
feeding, large fat percentages in, 811
mortality high, 225
mortality in New York City, 901
the care of the, 525
Infection, dust, atypical cases and, 794
general streptococcus, 807
latent microbic, 1178
of the placenta and excessive vomiting, 665
rheumatic, clinical aspects of, 23
systemic, with the colon bacillus, 414
Infirmary and laboratory at the Zoo, 1089
Inflammation, appendicular, 20
choroidal, due to excessive use, 77
Influenza in children, 499
treatment of, 761
Injured, first aid to the, 605
Injuries, subcutaneous of the abdominal wall and viscera, 520
Injury, large award for personal, 1043
Inoculation, antityphoid, 940
Insane and incurable, death for, 844
and paupers, 1186
are they responsible for criminal acts? 728
cottages for the, 323
criminal, what shall be done with the? 805
employment of the, 323
feigned, 969
in Ontario, the care of the, 999
relatives to support, 177
State asked to take, 844
State experts for the immigrant, 321
the care of the, 655
Insanity and epilepsy in relation to life insurance, 988
and responsibility, 1006
Insanity in relation to obstetrics and gynecology, 809
on the increase, 606
Inspectors, sanitary, transfer of, 29
Insufficiency, acute myocardial, 856
International Congress of Dermatologists, 566
congress on home relief, 85
Medical Congress, 658, 1235
Surgical Society, 1045
Interpreter for Bellevue, 513
Intestinal obstruction, 1275
Intestine, drain the, 1276
small, experiments on surviving mammalian, 126
small, micro-organisms in the, 508
polypi in the, 953
Intestines, method of uniting, 1273
Intrathoracic operations, pneumatic chamber for, 233
Intrauterine disease of the spinal cord, 44
Intubation, infrequency of, 900
Intussusception, 810
gangrene following, 1274
Investigations of Health Commissioner Reynolds in regard to dairy farms, 83
Iodide, lithiomercuric, 462
Iodine for sepsis, 860
in organs, presence of, 22
reaction of the blood, 991
with iodipin, excretion of, 362
Ions and colloids, 928
Ipecac, alkaloids of, action of, 167
Iris, the value of a knowledge of abnormal mobility of the, as an aid in diagnosis, 209
Iritis, nodular, 1160
Iron in animal economy, 1131

JABORANDI, alkaloids of, 557
James, Dr., election of, 468
Janeway, Theodore C., a new portable sphygmomanometer; also a blood pressure chart, 390
Japanese field surgery, 420
medical corps, 944
physicians in New York, 944
Red Cross Society, the, 1046
sanitary work praised, 704
surgeons and the war, 324
Japan hospital service, 895
Jarecky, H., urgent adenectomy during the progress of a pneumonia, 747
Jaundice, menstrual, 459
Jayne, Walter A., operative treatment of retroversion and retroflexion of the uterus, 1009
Jefferson Hospital, 418
Medical College, 702
Medical College Library, the, 1042
Jelliffe, Smith Ely, a visit to Gheel, 151
Jenkins, Dr., appointment of, 321
Jesting, some medical, 1231
Johns Hopkins Hospital Medical Society, 47, 235, 952, 1147
Johnston, Richard H., the bacteriology of panophthalmitis, 352
Joint affections, 520
Joints, diseases which affect the, 861
Journal, new State, 322

KALA-AZAR, 909
Kellogg, Kenneth E., influenza in children, 499
Kelly, Howard A., the treatment of simple rectal fistula by excision and suture without cutting the external sphincter muscle, 640
Kemp, Robert Coleman, observations on dilatation of the stomach and on gastroptosis, 249
Keyes, Edward L., Jr., prognosis and treatment of urethral stricture, 63
Kidney, complete destruction of the, by multiple metastatic abscesses, 623
disease, bilateral, 937
diseases of the, new aids in diagnosis of and their value, 87
movable, rapid growth and, 710
multiple septic infarction of the, 136
secretion of acid by the, 222
stone in the, 1011
surgery, 520
the lecithin content of fatty extracts from the, 230
Kidneys, chemical examination of diseased, 269
pathology of cystic, 23
Kiernan, James G., does absence of external injury legally demonstrate fright or mental etiology? 1018
Kilmer, Theron Wendell, difficult cases of infant feeding, 304
Kime, J. W., present-day treatment of tuberculosis, 455
Kinne, Howard S., hereditary syphilis, 302
Knee anchylosis, 719
external luxation of the, 174
Knopf, Dr., award to, 842
Koch, Prof., and the Royal Commission, 180
Koch's successor, 277
Kolipinski, Louis, arthritis deformans and its treatment, 444
Kolipinski, Louis, the antiseptic treatment of the puerperal woman, 1258
Kolischer, Gustav, cicatrization—blood vessels in ulcers of the blader, 926
Kraurosis vulvæ, etiology of, 461
Krotoszyner, M., and M. W. Willard, aseptic catheterization of the urinary passages, 406

LABORATORIES, summer, 127
Laboratory for the State Board of Health established, 468
Labor, induced, the ultimate results of, 716
results of induced, 837
Lacerations of the cervix uteri, 38
of the perineum, immediate repair of, 39
the preventive treatment of pelvic floor, 39
Lambert, Dr. Samuel W., dean at P. and S., 842
Landis, H. R. M., differential diagnosis between pulmonary tuberculosis and conditons resembling it, 548
Lane lectures, 657
Laparotomy in intussusception, 1275
Larynx, foreign bodies in the, 599
Law, Illinois pure food, 323
Lead as a factor, 859
Lecithin and snake venoms, 171
Lederle, Dr., on food adulteration, 654
Legal point of view, the, 1007
Legislation, medical, 284
Leidy, Professor, contributions to science of, 893
Leishman-Donovan bodies, the, 269, 908
Lemann, Isaac Ivan, extra-uterine pregnancy; its diagnosis. Report of cases, 1059
Leprosy, a case of tuberculous, 221
remedy for, 131
Leucemia, 520, 1085
acute, 857
atypical lymphatic, 220
myelogenous, 146
splenomedullary, 873
the etiology of, 1280
X-ray treatment of, 179, 464
Leucocytes, glycogen reaction of, 235
granules of, 170
in gynecological diseases and labor, 1037
in pus, 553
Levulosuria in liver disease, 622
Library, a new, for Cooper Medical College, 657
World's Fair Emergency Hospital, 29
Liebermann, L., the experiments of, 1273
Liell, Edward N., appendicitis: pathology and surgical treatment, 347
Life insurance, insanity and epilepsy in relation to, 988
Ligation of the extremities on blood-pressure, influence of, 460
Lipase in the urine, 121
in the urine in experimental pancreatic disease, 271
Lip, eczematoid eruption of the, 510
Lithemia and gout, deficient urea excretion in, 21
Litholapaxy, 622
Litigation, accident cases involving, 852
Liver, amebic abscess of the, 191
and pancreas, ascaridiasis of the, 458
bile capillaries of the, 170
cirrhosis of the, from a new standpoint, 750
cirrhosis of the, treatment of, 1280
congenital elongation of the left lobe of the, 852
glycogen and adrenalin, 126
new method for exposing the, 19
primary carcinoma of the, 90, 857
Lloyd, Dr., appointment of, 29
Lockjaw, chill room cure for, 564
fatalities due to, 178
Fourth-of-July, record, 515
Locomotor ataxia, encouraging case of, 44
the urinary disturbances in, 561
with tremor resembling paralysis agitans, 45

Lorenz, a rival to, 228
Lumbar puncture, therapeutics of, 374, 557
Lunacy reports, English, 704
Lying-in Hospital, the, 322
Lymphatic system, the surgical physiology of the, 769
Lymph-nodes, ossification of, 648
Lymphocyte, rôle of the, 1279
Lymphocytes, movements of, 169
the function of, 1280

MABIE, A. D., high-frequency currents; their physiological action and methods of appplication, 438
MacCallum, W. G., and W. B. Cornell, on the mechanism of exopthalmos, 732
Macdonald, Dr. A. E., retirement of, 701
Mackay, Malcolm, hereditary chorea in 18 members of a family, with a report of three cases, 496
Macrocheilia, etiology of, 1034
Macula lutea, in brain, localization of, 23
Malaria, bird, 1144
carriers of, 1129
contagiousness of, 765
lecture to Panama natives on the prevention of, 800
prophylaxis of, 765
the prophylaxis of, 651
tropical, 956, 1172
Malarial fevers, methylene blue in, 1137
Male fern, active principle of, 602
Malingery revealed by the use of ether, 969
Malpractice, sentenced for, 82
Manges, Morris, complications and sequelæ of gastric ulcer, 682
Manges, Morris, the rectal administration of the newer hypnotics, 588
Manhattan Dermatological Society, 82, 892
Eye and Ear Hospital, the new, 81, 945
Mamma, the, its physiological purposes, 902
Maretin, a new antipyretic, 557
Marey's life work, 421
Marriage-rate and birth-rate in Montreal, 947
Married by 'phone in smallpox ward, 843
Maryland school bequest, 657
Massachusetts General Hospital, 1090
Mastitis, chronic, 294
Mastoditis, 850
Maternity (free) incident closed, 82
Mayfield, Clifton, auto-intoxication of gastro-intestinal origin, 353
Mayo, C. H., the surgical physiology of the lymphatic system, 769
McCaw, James F., need of more accurate knowledge in the diagnosis and treatment of chronic suppurative otis media, 398
McCormick Memorial Institute, 1090
McGill medical faculty opens for the season, 656
McNulty, J. F., observations on obstetrics in general practice, 18
McWilliams, Clarence A., intestinal obstruction folowing appendicitis operations. Report of 86 cases, 400, 447
Measles, polymyositis and polyneuritis in, 554
Measurements, uniformity in pelvic and cranial, 40
Medical colleges, opening of, 605
and Chirurgical Society of Maryland, 236, 954, 1148
Association of the Greater City of New York, the, 377, 522, 956, 1280
building (new) at Ann Arbor, 1234
delegates sail, 1271
fads, popular, 130
Jurisprudence Society, 1233
officers of health, 33
officers with regimental unit in the field, 426
schools amalgamate, 1176
society, new county, 467
Society of the County of New York, 571, 707, 1244
Society of the Missouri Valley, 227
Society of the State of New York, 480, 944
Society of the State of Pennsylvania, 468, 717, 760, 849
training in Japan, 325
treatment of appendicitis, the, 588
Medico-Chirurgical College, 753
Medication, endotracheal, 884
Medicine, address in, 283
and law, comparative progress of, 433
preventive, 284
the pursuit of novelties in, 33
the study of, in Germany, 658
Medicine, tropical, 283
women in, 1271
Melancholia and neurasthenia, 707
hyperacute, 1253
involution, 1243
Melancholias, classification of the,, 1240
Meltzer, S. J., our aims, 642
Membranes, fetal, rupture of the, 165
Meninges in the acute infections, the, 513
Meningitis, cerebrospinal, 522, 523, 524
cerebrospinal, epidemic, 709
cerebrospinal, treatment of epidemic, 122, 368
septicemic cerebrospinal, 377
tuberculous, 140
versus abscess, 326
Men of science, 1135
Menstruation, bathing during, 837
disturbance of, 761
painful in young virgins, 660
tubal, 431
Merging of prominent chemical firms, 1270
Merit test for physicians, 1138
Mesenteric vessels, embolism and thrombosis of the, 458
Metaplasia, epithelial, in the stomach, 937
in the stomach, epithelial, 472
Method, the Finsen, 1255
Methods, business, in the practice of medicine, 1246
Meyer, Dr. Adolf, appointment of, 51
Meyer, Willy, osteoplastic gastrotomy for impermeable cicatricial stricture of the esophagus, 821
Microbes and candy, 26
Microcephaly, craniectomy in, 851
Middle-ear disease, treatment of acute, 532
catarrh, 1277
suppuration, 520
Migraine and chorea, 188
and muscle balance, 190
and sick headache, 194
Military surgeons, congress of, 754, 800
Milk, beta-naphthol in, 321
commission work of, 572
company to quit, a, 1269
dealers, suits against delinquent, 226
dispensaries in Baltimore, 131
formaldehyde in, 556
fund too small, 178
home modification of, 849
impure, jail for sellers of, 655
modification, 923
question, the, 468
supply in Chicago, 656
the coagulation of, 222
to shorten time of keeping, 753
twelve-hour, 656
typhoid, 566
Miller, Charles C., and J. H. Langstaff, a modified scissors, 120
Millican, Dr., resignation of, 467
Mills, Charles K., subdivisions of the concrete concept area of the human cerebrum, 865
Mineola hospital, gifts to, 916
Mineral waters, natural, 990
Miners' hospital enlarged, 843
Minin ray, the, 1171
Misocainia in medicine, 1074
Mississippi Valley Medical Association, 131, 805, 846, 861, 902
Mission, the sick children's, 129
Mitoses, the nature of the, 270
Molluscum contagiosum, pathology of, 270
Money for hospitals, 998
Mont Alto sanatorium, 514, 1185
Montreal General Hospital, 656
Health Department annual report, 947
Montreal's water, experts to examine, 948
Moros, Wood's footsore, 1247
Morphine habit, the treatment of the, 808
in heart disease, 558
masks symptoms, 1276
Morristown (N. J.) Medical Society, 179
Mortality for Chicago, low June, 130
for July, 353
for the week ended Sept. 3, 564
infant, an effort to decrease, 418
infant, reduction in, 276
lessened, among young children, 418
reduced infantile, 178
statistics, trend of, 30
Moschowitz, Alexis V., osteoplastic amputations, 392
Mosquito Extermination Society, National, 1136
Mosquitoes, extermination of, 755
in Montana, study of, 371
the flight of, 766
to keep out, 179
Mundorff, George Theodore, report of a case of obstinate phosphatic diathesis cured by systematic dilatations of the, (?)
Municipal Hospital, parents may visit, 753
Murder habit, the, 277
Murdoch, Frank H., further remarks on orthoform in the diagnosis of gastric ulcer, 692
Murphy, Dr., election of, 29
Muscle of a mummy, fermentation experiments with the, 125
Muscles, respiratory, action of the spinal centers upon the tone of the, 173
Muskoka, Can., climatology of, 619
Mutation, the theory of, 49
Mutter lecture, 1089
Myasthenia gravis, a case of, 139, 947
Myelomata, multiple, 648
Myoclonus, family, 906
Myokymia, primary, 12
Myositis, ossificians, 237
Myxedema, 75
pathology of, 649

NAILS in scarlet, changes in, 988
Nares, cicatricial occlusion of the, 599
Nasal accessory sinus disease, chronic, the application of conservative and radical surgery to, 100
septum, deformities of the, 845
Nasopharyngitis, lithemic, due to systematic disturbance (?)
Nassau County Hospital, 702
hospital, gift to, 842
National Association for the Study of Epilepsy and the Care and Treatment of Epileptics, the, 999
Association of Tuberculosis, the, 276
Naval Medical Corps, needs of the, 1188
Medical School, 657
Needs, urgent, of our hospitals, 1132
Nephrectomy, 136
double, 1036
Nephritis, acute scarlatinal, 812
chronic, 1150
chronic, renal decapsulation as a cure for, 812
influence of exercise, etc., on, 509
new operation for chronic, 234
Nephroptosis, its gynecological importance, 803
Nerve defects, 1127
depressor, action of, 1033
energy and electricity, 419
fibers, the union of different kinds of, 601
Nerves, pudic, the voice and the, 326
secondary suture of, 89
surgery of, a contribution to the, 89
Nervousness in school children, 564
Nervous system, study of the, 998
Neuralgia, treatment of, by injections of osmic acid, 21
Neurasthenia and the traumatic neuroses, 200
in the young, 707
mental disorders of, 519
the passing of, 707
Neuritis, brachial, 364
multiple, some unusual forms of, 45
Neurofibroma of acoustic nerve, 748
Neuron theory, the, 558
Neuroses, functional, and the eye, 188
Neutrophile leucocytes in infectious diseases, 268
Newark's water supply, 131
New Brunswick Provincial Hospital for Insane, 1234
Newcomb, James E., bone and cartilage in the tonsil, 581
Newcomet, Wm. S., the care of fractures from the standpoint of the general practitioner, 1115
Newmark, L., a series of nearly 600 spasms in an epileptic without disturbance of consciousness in the intervals, 828
New Jersey State Medical licentiates, 179
New Hampshire legal civilization, 754
New York Academy of Medicine, 187, 423, 608, 701, 752, 1093, 1184
Academy of Medicine—section on genito-urinary diseases, 134, 331, 622, 666
Academy of Medicine—section on obstetrics, 713, 759
Academy of Medicine—section on orthopedic surgery, 1102
Academy of Medicine—section on pediatrics, 327
Academy of Medicine—section on surgery, 759
City milk supply, 572
Eye and Ear Infirmary, 842
Neurological Society, 129, 1240
Pathological Society, 90, 180
Polyclinic, 1074

New York Postgraduate medicine, 1247
School of Clinical Medicine, 196
School of Clinical Medicine, reorganization of the, 944
State Medical Association, 801, 900
State Medical Association Meeting, 797
State Medical Association, officers of the, 798
State Medical Association—New York County Branch, 374
N. Y. Skin and Cancer Hospital, appointments at the, 1269
Nicholson, J. L., and Watson S. Rankin, uncinariasis as seen in North Carolina; its frequency, etiology, pathological significance, symptoms and treatment, 978
Nipple, Paget's disease of the, 553
Nitrobenzol, fatal poisoning due to absorption of, 887
Nitrogen necessary for life, 534
Nitroglycerin in erysipelas, 1132
Noble, Charles P., overlapping the aponeuroses in the closure of wounds of the abdominal wall, 1162
Norris, Dr., appointment of, 276
Norris, George William, the diagnosis of incipient pulmonary tuberculosis, 542
Norristown Asylum, report of, 753
North Branch Philadelphia County Medical Society, 285, 814, 1149
Northern New York Medical Association, 321
Northrup, Dr., in Chicago, 703
Northwest Medical Society of Philadelphia, 238
Nose and voice development, the aquiline, 469
Notifiable diseases, list of, increased, 130
Nova Scotia Branch of the British Medical Association, 947
Nurse, district, in her relation to cases of pulmonary disease, 785
Nurse's home presented to hospital, 1137
Nurses will soon return, 843

OBESITY, 122
painful, 219

OBITUARY—
Allison, Dr. Harry E., 1000
Banks, Sir William Mitchell, 325
Barnett, Dr. D. M., 420
Bemis, Dr. Merric, 705
Bixler, Dr. Jacob P., 1140
Brown, Dr. Orlando, 325
Buffet, Dr. Edward P., 566
Butler, Dr. A. W., 566
Butler, Dr. Clarence Willard, 1235
Carroll Dr. William E., 1140
Cassaday, Dr. F. F., 325
Chabert, Dr. Romeo F., 279
Coleman, Dr. W. L., 1092
Conant, Dr. George S., 659
Cushman, Dr. William F., 1140
Cyphers, Dr. Millard Fillmore, 516
Dodge, Dr. Lindhurst C., 372
Dorn, Dr. John H., 32
Echemendia, Dr. D. M., 1236
Elebash, Dr. Clarence S., 1235
Finsen, Prof. Dr. Niels, 659
Fischer, Dr. J. F., 1190
Fiske, Dr. William M. L., 1236
Flowers, Dr. William C., 847
Gormly, Dr. John L., 517, 608
Greenough, Dr. Frank, 801
Hemingway, Dr. Samuel, 1236
Henry, Dr. Joseph N., 756
Heston, Dr. George T., 420
Hetzell, Dr. Davis G., 897
Horwitz, Dr. Phineas, 705
Lambert, Dr. Edward W., 180
Law, Dr. Charles K., 1235
Lowden, Dr. L. A., 32
Lyman, Dr. Henry M., 1092
MacCallum, Dr. Duncan Campbell, 1047
Mackey, Dr. John J., 659
Maduro, Dr. Montefiore Levi, 847
Martin, Dr. William Hammet, 516
McCarroll, Dr. Henry B., 373
McLean, Dr. Henry C., 1272
Milbank, Dr. Robert, 325
Muller, Dr. Auguste Frederic, 847
Newton, Dr. Charles, 471
North, Dr. Nelson L., 1092
Nott, Dr. J. Frederick, 420
Parkman, Dr. Truman E., 847
Pitkin, Dr. Leonard F., 1140
Polk, John Metcalf, 28
Price, Dr. Mordecai, 897
OBITUARY—Continued—
Pryor, Dr. William Rhys, 470, 1042, 1232
Purcell, Dr. John, 659
Purviance, Dr. George, 847
Ridgely, Dr. Henry, 608
Royer, Dr. Lewis, 897
Rundio, Dr. Eleanor Louise, 897
Simons, Dr. E. G., 516
Simon, Sir John, 228
Smith, Robert M., 226
Soper, Dr. Oliver, 847
Steinberger, Dr. Victor, 658
Tuck, Dr. Henry, 510
Warden, Dr. A. W., 372
West, Dr. G. S., 1272
White, Dr. William, 801
Wickham, Dr. David D., 705
Wiener, Dr. Joseph, 373
Williams, Dr. Bryan G., 85
Wilson, Dr. William, 897
Woodhouse, Dr. Samuel W., 847
Woodward, Dr. Charles S., 85

Obsessions to delusions, transition of, 306
Obstetrical Society of Philadelphia, 427, 474, 611, 715, 1098
Obstetric experience, some interesting, 290
Obstetrics, observations on, in general practice, 18
some surgical aspects of, 145
Obstruction, acute intestinal, 749
intestinal, following appendicitis operations, 400
postoperative intestinal, 886
Ohio State sanatorium for tuberculosis, 1188
Oil plant injurious to health, 945
Olive oil, treatment of constipation by, 940
Ontario Board of Health, 998
Medical Council annual meeting, 83
Operations, appendicitis, obstructions following, 400
aseptic surgical, what are the minimum requirements for? 35
capital, advantages of performing, 852
Ophthalmological journal, new, 323
Opium, governmental monopoly of, 658
in Formosa, control of, 419
Optometry bill again, that, 1093
Orange hospital, site for, 411
Orient, a lesson from the, 795
Orthoform in gastric ulcer, 692
Orth, Professor, arrival of, 515
Osler, Dr., going to Oxford, 371
Dr., honor for, 179
Dr., on immortality, 840
Dr., proposed memorial to, 1187
Osler's (Dr.) successor, 1187
Osmic acid, injection of, for tic douloureux, 885
acid, treatment of neuralgia by injections of, 21
Osteomalacia, 1084
Osteomyelitis, acute, 237
and tuberculosis of the patella, 363
Osteosarcoma, removal of upper jaw for, 89
Otitis, acute, in children, 51 cases of, 813
media, chronic suppurative, 398
non-suppurative, 1277
Diplococcus intracellularis in, 710
Otology, conservatism in, 241
Our London Letter, 33, 85, 132, 228, 705, 756, 847, 897, 940, 1047, 1140, 1190, 1236, 1272
Paris Letter, 279, 373
Ovarian complications, 714
cysts, three, 1193
Ovary, papillary tumors of the, 37
Oxford Medical School, the, 280, 281, 282
Oxidases, the rôle of the, in the animal economy, 1230
Oxygen, 1086
the value of, in connection with anesthetization, 758
Oyster and typhoid fever, the, 571
barges and sewage, 572
beds and contagious material, 571
Ozena, treatment of, 77
Ozone, disinfection with, 468

PACKARD, Francis R., the value of early incision of the membrana tympani in the treatment of acute suppuration of the middle ear, 534
Packer, Dr., at River Crest, 996
Page, Charles E., the rational vs. the "regular" treatment for typhoid fever: Hanna's case, and some others, 71
Paget's disease of the nipple, 553
disease, relation of, to carcinoma, 1179
Pain, renal reflex, 123
Pains, rainy-day, 859
Palate, treatment of cleft, 87
Palpation, ulnar, 762
Palsies, cerebral, in children, 1259
Palsy, brachial birth, 1244
Erb's 142
obstetrical, a case of, 140, 141
Panama canal service, 1189
health situation, 801
sanitation at, 29, 515
Pan-American Congress, surgeons at, 999
delegate, 1136
Medical Congress, fourth, 372, 896, 1091, 1234
Medical Congress, officers of, 469
Pancreas disease, new diagnostic sign of, 621
in diabetes, 1036
in the metabolism of carbohydrates, the activating substance of the, 793
the adaptation of the, 316
the relations of surgery to the recent advances in the knowledge of the, 97
Pancreatic disease, experimental, lipase in the urine in, 271
Pancreatitis, 1061
a case of acute, associated with gallstones, 87
acute, with recovery after laparotomy, 599
Panophthalmitis, 352
Paper, absorbent, the use of, in the service of practical hematology, 776
Paraffin as a surgical medium, 850
hard in nose deformities, 1278
Paralysis, pseudobulbar, 68
Paralysis after trauma, 21
and antitoxin, diphtheritic, 447
etiology of facial, 1227
facial, 43
Landry's, following influenza, 364
obstetrical, a case of, 141
postdiphtheritic, 77
sensory, 1148
Paraplegia, spastic, 365
Parasite, a rare human, 74
Paratyphoid, 1247
optic neuritis in, 412
Paresis, general, 348
intestinal, prevention of postoperative, 838
Parks, our city, 1041
Parotid and lacrimal glands, symmetrical enlargement of, 1160
Patek, Arthur J., intermittent claudication and analogous phenomena (angina pectoris, etc.), 1069
Patella, congenital absence of the, 124
Patent medicines at the Canadian Medical Association, the question of, 657
Paterson drainage canal and New York Bay, the, 2
new sewage system for, 226
Pathological society, 655
society exhibition, 1270
society, officers of, 843
Society of Philadelphia, 1080
Pathology, antenatal, 521
Patriotism in Hungary, 1234
Paupers and insane, 1186
Pedersen, Victor C., the difficulties of anesthetization and their correction, 1250
Pauperization, 568
Pediatrics, recent advances in the therapeutics of, 492
Pelvis, transverse diameter of the, 807
Penis, malignant growth of the, 951
Pennsylvania Medical Journal, 467
State Medical Association, 1138
Pepsin, quantitative determination of, 75
Pericarditis, tuberculous, 220
Perineum and pelvic floor, immediate repair of, 1105
Peristalsis, the comparative physiology of, 222
Peritoneum, resistance of the, against infection, 234
Peritonitis after phlegmon of arm, 510
diffuse, 608, 609
gynecological, 610
perforation, peritoneal exudate an early symptom of, 23
pneumococcus, 1183
position for 234
pseudomembranous monocystic tuberculous, 660
spreading, 6
treatment of postoperative, 458
tuberculous, 861
Perpetual youth, the secret of, 132
Perspiration, dynamometer for measuring, 45

Phagocytosis, the rôle of the blood fluids in connection with, 271
Pharmacists, certificates for, 418
protest, 965
Philadelphia County Medical Society, 953, 1051
Philanthropy, sensible animal, 800
Philippines, health work in the, 278
Phlebitis, gonorrheal, 1038
recurring, 952
Phobias, pathognomonic of neurasthenia, 707
Phosphaturia, 1130
Phototherapy with fluorescent solutions, 167
Physical test, the, 563
Physicians, addresses by foreign, 655
as inspectors of tenements, 129
bookkeeping, 285
in Cuba, 324
Physician, tablets in honor of noted, 29
Physiology, the surgical, of the lymphatic system, 769
Physostigmine, inhibition of the action of, 793
Piffard, Henry G., second note relative to the more efficient utilization of the spark-gap radiations, 1057
Piroplasmosis, 700, 911
human, 1034
Pitfalls, zoological, 1136
Pittsburg meeting, no exhibits at the, 655
Placenta previa, 521
Plague stops army coats, 1234
Pleurisy, radiographic appearances in, 108
with effusion, 761
Pleuritis, treatment of tuberculous, 807
Pneumococcus peritonitis, 1183
Pneumomelanosis, a case of, 987
Pneumonia, 761
Commission, 1042
commission to meet, 798
croupous, in children, 1278
etiology of, 362
herpes zoster in, 220
in adults, treatment of, 1228
increase of, 122
inquiry begins, 842
investigation and prophylaxis, 177
lobar, 855
lobar, treatment of in the adult, 108
once more, 891
pathogenesis of crisis in, 888
problem, the, 520
the crisis and treatment of, 221
urgent adenectomy during the progress of a, 747
virulency of sputum in, 318
Pneumothorax, 1198
Podstata, Dr., reappointment of, 1186
Poisoning due to absorption of nitrobenzol, 887
Poisons upon the pulmonary circulation, the action of various, 168
Poliomyelitis, treatment of acute anterior, by nerve anastomosis, 44
Polyadenomata of the rectum, 477
Polyclinic hospital, 226
Polycythemia in congenital heart disease, 180
Polymyositis, 459
and polyneuritis in measles, 554
Polyneuritis, 520
following influenza, 364
Polypoids, mucous, extirpation of, 599
Polyuria in typhoid fever, 529
Pond, A. M., the gastro-intestinal crisis of erythema exudativum; simulating appendicitis, 506
Poor, care of the city, 28
law and health legislation, 284
Postgraduate medical instruction, 1247
Potassium iodide, absorption of, from the stomach, 1226
on the heart and blood vessels, the influence of, 554
Pott's disease, the early diagnosis of, 160
Poverty and public health, 569
Practitioners, illegal, rid the community of, 286
Pregnancy and appendicitis, 521
and puerperium, heart and circulation in, 1036
determination of the length of, 461
extra-uterine, 157, 1059
heart disease in, 1278
hepatic disease in, 560
secondary abdominal, 555
Prentice, the unveiling of, 1040
Prentiss, Dr., appointment of, 276
Preparations, cytological, demonstration of, 232
Presbyterian Hospital, report of, 1136
Prescription hints, 1086, 1132
writing, 1050
Prescriptions, multiplicity of, 189
Preservatives in food products, 1233
regulations of poisonous, 1185
that do not preserve, 1185
Prevention, an ounce of, and the pound of cure, 559
Pritchard, Dr., appointment of, 1136
Prize, a first, for New York, 798
Professorship of medicine at Oxford, the, 228
Prolapse, rectal, treatment of, by paraffin injection, 698
Prolapsus uteri, etiology of, 1037
Prostate, cancerous, 1002
infections of the, 772
Prostatectomy in emergency, 902
perineal, 863, 1001
perineal galvanocautery, 134
perineal, with severe cystitis, 622
suprapubic, 1001
suprapubic, under nitrous oxide, 124
Prostatic enlargement, 863
Protozoan of scarlet fever, the, 1228
Pryor, Dr. Wm. R., appointment of, 80
Pruritis ani, 1086
ani, treatment of, with the Roentgen rays, 477
Prussic acid, 119
Pseudo-appendicitis, 375
hermaphroditism, internal, 713
leucemia lymphatica, 221
Psittacosis, three cases of probable, 780
Psoriasis, treatment of, 168
Pschology, study from and book, 658
Psychoses among soldiers, 754
exhaustion, 187
eye-strain and the, 193
minor or borderline, 45
posttyphoidal, 236
Psychosis, anxiety, 1243
Public health conditions, 1271
Puerperal woman, the antiseptic treatment of the, 1258
Pulse tracing, remarkable, 280
Pulsus paradoxus, cause of the, 414
Punton, John, are the insane responsible for criminal acts? 728
sanitarium, 260
Pure food, notable victory for, 843
Purgatives, abuse of, 1277
Purin bases in feces, excretion of, 1226
Purpura, Henoch's, 47, 1131
Pus in the nose, the significance of, 1218
Putrefaction, a new alkaloid of, 169
Pyelitis, infant acute, 855
Pyemia, puerperal, prognusis and treatment of, 272
Pylorus, atresia of the, 1148
P. & S. and hospital appointments, 80
gifts for, 752

QUACKS, number of, 1245
prosecution of, 574
Quebec College of Physicians and Surgeons, 703
Quinine by infection, 990
in hay fever, 888
palatable syrup of, 1132
Quintuplets, case of, 366

RABIES, diagnosis of, 1246
true or inoculated, 988
Race suicide, 51
suicide and education, 179
Radiations, spark-gap, 1057
Radiotherapy, 1246
Radium and parthenogenesis, 426
definite information as to, 424, 425
Finsen light and X-ray, 462
on micro-organisms, the action of, 271
rays and diphtheria, 565
rays, effects on cell division, 73
recent studies on, 415
results with the use of, 89
the physiological action of, 318
therapeutic value of, 864
the therapeutic value of, 85
value of, 954
Railroads and health boards, 893
Railway cars, ventilation of, 1185
Ramsay's latest researches, 565
Ransohoff, Joseph, stone in the kidney; its diagnosis and operative treatment, 1011
Ransom, Charles C., an analytical study of 28 cases of arthritis, with special reference to gout and its treatment, 481
Rashes, scarlatiniform, 1229
Ray, the Minin, 1171
Reception to visitors at Academy, 654
Rectum, prolapse of the, 477
Red cross in Japan, the, 131
new charter of the, 1272
Reed, Walter, and the Panama sanitary outlook, 403
Reflection, stereoscopical, 1093
Reflexes, ocular, their influence on the general health, 805
Renal capability, determination of, 219
disease, surgical intervention in, 748
disease, chronic, the treatment of, 1199
Research work in government laboratories, 372
Resection, intracranial, of the second division of the fifth, 123
Responsibility, criminal, 1005
Retroversion during pregnancy, treatment of, 165

REVIEWS—
Allen, Charles Warrene, radiotherapy and phototherapy, 1283
Arnold, Carl, a cumpendium of chemistry, 960
Beck, Carl, Roentgen ray diagnosis and therapy, 576
Bergey, D. H., the principles of hygiene, 1152
Bishop, Louis Faugeres, blood pressure, 1248
Brouner, Walter Brooks, and Fung Yuet Mow, Chinese made easy, 1151
Bryant, J. H. and F. J. Steward, Guy's Hospital reports, 144
Buck, Albert H., a reference handbook of the medical sciences, 959
Burdett, Sir Henry, Burdett's hospital and charities, 1904, 336
Busch, Frederick C., Kirke's handbook of physiology, 1056
Carr, Walter Lester, transactions of the American Pediatric Society, 1152
Chapin, Henry Dwight, the theory and practice of infant feeding, 960
Cleaves, Margaret A., light energy; its physics, physiological action and therapeutic applications, 1151
Clouston, T. S., clinical lectures on mental diseases, 1248
Coolidge, Evelyn Lincoln, the mother's manual, 1284
Cornet, G., tuberculosis and acute general miliary tuberculosis, 240
Davis, Edward P., a treatise on obstetrics, 1248
Dudley, E. C., the principles and practice of gynecology, 1104
Dulles, Charles W., accidents and emergencies, 1248
Edebohls, George M., surgical treatment of Bright's disease, 1151
Esenwein, J. Berg, how to attract and hold an audience, 95
Gibbons, Edward E., the eye, its refraction and diseases, 94
Gould, Geo. M., the American yearbook of medicine and surgery, 432
Grafstrom, Axel V., a text-book of mechanotherapy, 528
Haab, O., Atlas and Grundriss der Lehre von der Augenoperation, 720
Hall, G. Stanley, adolescence, its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion and education, 96, 287
Hare, Hobart Amory, progressive medicine, 288
Hill, E. E., pain and its indications, 287
Illoway, H., the summer diarrheas of infants, 240, 1284
International clinics, 288, 336
Jackson, Edward, the ophthalmic year-book, 672
Janeway, Theodore C., the clinical study of blood pressure, 912
Kehr, Hans, Bericht uber 137 Gallensteinlaparatomien aus dem letzten Jahre, etc., 432
Kyle, D. Braden, a text-book of diseases of the nose and throat, 1284
Leube, Wilhelm v., medical diagnosis, 960
Maury, J. W. Draper, surgical differentials, 528
May, Charles H., text-book of ophthalmology, 95
McFarland, Joseph, a text-book of pathology, 1056
Mitchell, John K., and Luther Halsey Gulick, system of physiologic therapeutics, 192
Moulton, Charles Wells, the doctor's leisure hour, 816

Reviews—Continued—
Moulton, Charles Wells, the doctor's red lamp, 1283
Musser, J. H., a practical treatise on medical diagnosis, 287
Nagel, Joseph Darwin, epitome of nervous and mental diseases, 1152
Nelaton, Ch., and L. Ombrédanne, la rhinoplastie, 144
Nothnagel, Herman, diseases of the intestines and peritoneum, 336
Oppenheim, H., diseases of the nervous system, 95
Ott, Isaac, a text-book of physiology, 1152
Paget, Stephen, the case against antivivisection, 288
Paget, Stephen, what we owe to experiments on animals, 288
Phillips, Charles D. F., materia medica, pharmacology and therapeutics: inorganic substances, 287
Prescott, S. O. and Charles E. Winslow, elements of water bacteriology, with special reference to sanitary water analysis, 1284
Report (annual) of the Department of Health of the City of New York, 1152
Ricketts, Benjamin M., the surgery of the heart and lungs, 1152
Rosenbach, O., physician versus bacteriologist, 1104
Rostoski, O., manual of serum diagnosis, 1248
Sachse, Helena V., how to cook for the sick, 1056
Scratchley, Francis A., electrodiagnosis and electro-therapeutics, 1284
Senator, D. H., and S. Kaminer, health and disease in relation to marriage and the married state, 1056
Shaw, John C., essentials of nervous diseases and insanity, 1284
Simon, Charles E., a manual of clinical diagnosis, 96
Simon, Charles E., Simon's physiological chemistry, 1056
Snow, William Benham, a manual of electrostatic modes of application, therapeutics, radiography and radiotherapy, 192
Stoney, Emily A. M., practical materia medica for nurses, with an appendix, 960
Taylor, Robert W., Taylor on genito-urinary and venereal diseases and syphilis, 912
Thomson, William Hanna, Graves' disease with and without exophthalmic goiter, 88
Thorpe, Francis Newton, life of William Pepper, M.D., LL.D., 95
Transactions of the American Climatological Association for the year 1903, 191; 1904, 1283
Treves, Frederick, the student's handbook of surgical operation, 959
Tuley, Henry Enos, pediatrics, 192
Tyson, James, a treatise on Bright's disease and diabetes, 1283
von Bergman, E., P. von Bruns and J. von Mikulicz, a system of practical surgery, 287, 720, 816, 1055
Von Noorden, Carl, clinical treatises on the pathology and therapy of disorders of metabolism and nutrition, 336
Walker, Emma E., beauty through hygiene, 1151
Wassermann, A., immune sera, 192
Wilcox, Reynold Webb, a manual of fever nursing, 288
Wolff, Lawrence, essentials of medical chemistry, 1152
Wood, Casey A., and Thomas A. Woodruff, commoner diseases of the eye, 48
Wright, A. E., a short treatise on antityphoid inoculation, 864
Yeo, I. Burney, the therapeutics of mineral springs and climates, 192, 336

Rheumatism, acute articular, treatment of, 166
acute and chronic articular, serum treatment of, 602
complications of, polyarticular, 837
new treatment of, 1132
so-called, 859
Rhinitis, ozenatous atrophic, 940
Rhinophyma, 938
Richards, George L., the significance of pus in the nose, with special reference to the affections of the accessory sinuses and their proper treatment, 1218
Richardson, J. J., endotracheal medication, 884
Richmond, Nelson G., vaccination and the law, 262
Rocky Mountain Interstate Medical Association, 324
Rockefeller Institute plans, 276
Research Laboratory, 1136
Roentgen Ray Society, 470
rays, action of, 268
rays, action of, on internal organs, 73
rays and radium therapy, 718
treatment for malignant diseases of the breast, 1131
Rose, A., gastroptosia, 110
Rose, Achilles, misocainia in medicine, 1074
Rubbergloves, sterilization of, 989
Rules, sanitary, changed, 322
Rupture of the ear drum by lightning, 1179
Rush Medical College, commencement exercises of, 29
Russia, physicians in, 755

Sachs, B., the relation of epilepsy, chorea and other motor disturbances of the nervous system to eye disease, 197
Dr., leaves the Polyclinic, 1088
Saddle-nose, celluloid plate in, 78
Salicylic acid preparation, a new, 166
Samaritan Hospital, benefit concert for, 606
Sanatoria for tuberculous poor in England, 515
Sanatorium opposed, 945
Sanitary conference, 1130
work at canal zone, 515
Sanitation at Panama, 29
in volunteer camps, 384
Japanese in war, 810
lax, the cost of it, 720
Santa Barbara, Cal., climate of, 619
Sarcoma, observations in, 460
of the clavicle, 315
primary, of vagina in the adult, 165
Savidge, Eugene Coleman, hysterectomy and the general health, 1212
Scapula, congenital elevation of the, 362
crepitus from the, 219
Scarlatina and measles, fever curves of, 423, 424
Scarlet, changes in nails in, 988
fever and milk, 567
fever, discussion on the treatment of, 377
fever, the protozoan of, 1228
Schauffler, William Gray, the Minin ray, 1171
Schenck, Benjamin R., renal hematuria of unexplained origin, 1206
Schlapp, M. G., and James J. Walsh, a complete case of syringomyelia, 876
Shoemaker, John V., tropical malaria, 1172
Schott treatment at home, the, 997
School children, Berlin, examined, 607
diphtheria in London, 568
hygiene and the growing child, 467
inspection, report of, 322
Schools, medical, to amalgamate, 1176
Scientists, German, entertainment for, 417
Scissors, a modified, 120
Sclerosis and dilatation of the coronary arteries of the right heart by digitalis, 937
chronic adhesive peritoneal, 661
disseminated, 305
Scoliosis, congenital, 1102
Scorbutus, 339
Scurvy from humanized milk, 76
Sea bathing, 762
climate and sea-bathing upon metabolism, the influence of, 554
Seasickness, some theories of, 754
validol in, 382
Secretory process, chemical relation of the, 267
Section, abdominal, 521
Semon, Sir Felix, and Mount Sinai, 945
banquets to, 892
entertained, 606
receptions to, 321
Sency Hospital secures gift, 1232
Sepsis after operation for adenoids, 185
puerperal, 260
puerperal, new operation for, 427
puerperal, prophylaxis of, 24
Sera, normal and hemolytic action of fluorescent substances on, 833
Serum, antistreptococcic, 1245
antitetanic, 1125
Serum, gastrotoxic, 992
Marmorek's antituberculous, 166
treatment of acute and chronic articular rheumatism, 602
Sewage, scientific dispositon of, 949
system, new, for Paterson, 226
Sex and brain, 607
Shaw, Henry L. K., the treatment of scarlet fever with the Moser antistreptococcus serum, 817
Shock, amputation, nerve blocking to prevent, 937
nervous delirium from, 385
surgical, suprarenal gland in, 851
Shrady, Dr. George F., 319
Shute, D. Kerfoot, the value of a knowledge of abnormal mobility of the iris as an aid in diagnosing diseases of the nervous system, 209
Sick headache and migraine, 194
Silver colloidal, the action of, 992
Silver salts in gonorrhea, 471
Simon, Charles E., and D. G. J. Campbell, myelogenous leucemia with disappearance of the splenomegaly and the myelocytes, 146
Sinuses, nasal accessory, 904
Sinusoidal current and circulatory organs, 557
Sinus pericrani, a case of, 125
Sirolin, 1086
Sisters' hospital assured, 131
Situs transversus, 1148
Skene monument, site for, 702
Skiagraphy, stereoscopic, 799, 954
Skimmianin, 1131
Skin and Cancer Hospital, annual meeting of, 1088
diseases, progress in treatment of, 718
disinfection of the, 218
lesions, 236
macular atrophy of the, 810
Skipping as an exercise, 132
Skull and brain, effect of direct and indirect violence upon the, 809
exploratory puncture of the, 576
fractures of the base of the, 1177
Sleeping sickness, lymphatic glands in, 271
Smallpox, 799, 1270
and vaccination, 277
an epidemic of mild, 805
hospital closed, 655
in Connecticut, 515
in Dowie's land, 371
in Zion City, prevalence of, 418
on steamship, 513
practical points concerning, 762
quarantine raised, 130
red light treatment of, 78
Smoke nuisance, to suppress, 655
Snake bite, 1130
bites, treatment of, 221
venom and cold-blooded animals, 419
venoms, lecithin and, 171
Soap tinctures for cleansing the hands, 363
Socialism, medical, 805
Society for Experimental Biology and Medicine, the, 230, 1143
for Psychic Research, 997
for the Study of Alcohol and Narcotics, 516
of Medical Jurisprudence, the, 996
of the Alumni of City Hospital, 951, 1217
of Tropical Medicine incorporated, 130
Soper, George A., the need of efficient public health work in the suburbs, 627
Sore, oriental, 911
Sodium, fluoride of, action of on bone, 233
sulphite a dangerous food preservative, 166
Southern Medicine and Gaillard's Medical Journal, 658
Surgical and Gynecological Association, 1046, 1274
officers of the, 1271
Specificity in bacteriology, 175
Speech in young children, 850
Sphincter, the ileocolic, 316
Sphygmomanometer, a new, 390
a new portable, demonstration of, 232
Spinal respiratory centers, the, 600
Spingarn, Alexander, the biological interpretation of cancer, 343
Spirits, consumption of, in Canada, 846
Splenectomy, 90
Spleenless men, 862
Splenomegaly, primary, 90
tropical, 911
Sprain, 1085

Spratling, William P., the influence of the first and second dentition periods in the etiology of epilepsy, 1111
Sputum, diffusion from, 327
expelled in talking, 845
in pneumonia, virulency of, 318
virulence of pneumonic, 622
Stain, a new capsular, 1267
Staining, a new method for, 1117
State board and New York examinations, 702
Commission of Health, 573
examinations unsatisfactory, 276
hospital, site for, 130
Statistics, beverage, 1000
thoughts suggested by health department, 172
Stearns, Henry S., the president's inaugural address, 1209
Stenosis, intestinal, new operation for, 1178
of pylorus, case of infant congenital hypertrophic, 811
Sterility, 54
due to retrodeviation of the uterus, 665
from congenital causes, 59
from pathological causes, 59
from psychological causes, 60
from traumatic causes, 60
from vaginal causes, 58
primary, 55
secondary, 58
Sterilization, fractional, 35
hand, 35
of infection discharges and utensils on field service, 426
Stimulation, the nature of chemical and electrical, 461
Stomach, cancer of the, 990
carcinoma of the, 890
epithelial metaplasia in the, 472
innervation of the, 316
normal, temperature and secretion of the, 22
observations on dilatation of the, 249
pathology of bullet wounds of the, 509
transillumination of the, 804
Stone William S., some surgical aspects of obstetrics, 145
St. Elizabeth's Hospital, 80
Hospital in litigation, 418
St. John's Guild, 466, 955
Hospital at Yonkers, gift to, 419
St. Joseph's Sanatorium, 963
St. Lawrence County Medical Society, 321
St. Luke's Hospital, 418
Hospital, donation for, 564
Strabismus, convergent, 850, 1170
Street cars still unheated, 1270
Streets of New York, the, 699
Streptococci, immunity against, 553
Streptococcus serum, 621
the, in gynecological surgery, 41
Stricture, esophageal, gastrostomy for, 89
urethral, 63
Strontium, the excretion of, 168
Strophanthus, action of, 557
Strychnine injections, diabetes insipidus treated by, 554
the fate of, in the rabbit's intestine, 1033
Studies in asepsis, some, 35
Stypticin, properties of, 602
Subway air, 1041
sanitary aspects of the rapid transit, 941
Suffolk District Branch Massachusetts Medical Society, 1139
Sugar from fat, origin of, 22
from proteid, origin of, 22
production of, in the organism from albumin and fat, 317
Sulphur, pharmacology of, 168
Summer laboratories, 127
Suppuration, acute, of the middle ear, 534
the iodine treatment of, 938
Suprarenal glands, pathology of the, 552
tissue, active principle of, 462
Surgical appliances left in operation wounds, 85
operations, aseptic, what are the minimum requirements for? 35
Surgeon (assistant) Public Health and Marine Hospital Service, 85
general of Pennsylvania, 29
Surgeons, military congress of, 754
New York and New England Association of Railway, 469
Surgery, asepsis in, 903
Japanese field, 420
prostatic, progress in, 1039
recent advances in, 1107
relation of medicine to, 520
some fads in, 1246
Surgery, subcutaneous feeding in, 234
the evolution of, 88
the streptococcus in gynecological 41
Suture, bone, in subcutaneous fractures, 234
continuous, 1275
materials, 326
results of abdominal wall, 191
Swedish Hospital, opening of, 563
Sydenham Hospital charges, 407
Symmers Douglas, report of a case of Addison's disease treated by means of suprarenal extract and adrenalin-chloride, 502
Symphyseotomy, 521
Symptoms, morphine masks, 1276
Syphilis, a new mercurial salt in, 167
hereditary, 302
insontium, 814
in the higher apes, 650
Syphilitics, congenital, the heart and aorta in, 751
Syringomyelia, a complete case of, 876
Szwaikart, Dr., appointment of, 130

Talbot, Eugene S., interstitial gingivitis or scorbutus, 339
Talma operation, rationale of the, 1283
Tallqvist scale, hemoglobin estimation with, 458
T. W., the use of absorbent paper in the service of practical hematology, 776
Taylor, J. Madison, diagnosis of disease in children, 1153
Teachers in good physical condition, 504
Temperature and secretion of the normal stomach, 22
Tenotomy, 864
Testicle, tuberculous, the treatment of, 111
Testis, atrophy of, a case of, 624
Tetanus, prophylaxis of fourth-of-July, 25
toxin in both cultures, period of the greatest accumulation of, 90
toxin, lesions produced by, 1034
the prevention of, 124
treated by intravenous injection of antitoxin, 123
Texan wellspring of pleasure, a 416
Texas cattle fever in Pennsylvania, 563
Thayer, W. S., an analysis of 42 cases of venous thrombosis occurring in the course of typhoid fever, 637
Theocin poisoning, 459
Therapeutics, modern, 380, 381, 382
Therapy vs. diagnosis, 382
Thiocol and sirolin, 1086
Thoraco-abdominophagus, radiograph of a, 858
Thrombi, multiple arterial, 75
Thrombosis, portal, the liver in, 277
unilateral, 92
venous, 637
Thrombus, calcified of the inferior vena cava, 91
Thymus, reaction of, to assimilation of calcium salts, 602
Thyroidectomy for exophthalmic goiter, 90
Thyroid disease, 1084
gland, removal of one-half, 20
physiology of the, 126
Thyroidism, 90
Tibia, complete removal of the shaft of the, 36
Tic douloureux, injection of osmic acid for, 885
Todd, Robert N., hyperacute melancholia, report of a case, 1253
Toe, excision of the joint capsule in a gouty, 598
Tonsil, bone and cartilage in the, 581
the submerged, 66
Tooth-brush, with the help of a, 841
Toronto, a new general hospital for, 947
general hospital, graduation exercises at the, 846
General Hospital, magnificent gift to, 703
University senate elections, 948
Toronto's new consumption hotel, 999
Toxemia, gastro-intestinal, 812
Trachoma, war on, 562
Trauma, paralysis agitans after, 21
Trinity confers her last degree, 704
Trolley cars to be improved, 605
Tropical medicine, lectures on, 753
Trypanosoma disease in man, 219
gambiense, 616
Trypanosomes, 1144
Trypanosomiasis, 526
Trypsin, the protective value of proteids on, 600
Tsetse flies, 912
Tuberculin, reaction, value of, 73
Tuberculosis, 522
adrenal, 591
an appeal for aid in the fight against, 1229
and city dust, 27
and conditions resembling it, 548
and demineralization, 172
bovine and human, 328
circumcision, 327
city lax in, 1271
commission on, 33
congress, 419
cost of, 705
cost of, in this city, 321
danger of bovine, 329
diagnosis of advanced, 546
directory, 1232
dispensary for, in Ohio, 226
dissemination of, in the female genitals, 1178
English public houses and, 315
hereditary predisposition in, 807
home treatment of, 577
hospital, Jewish, 1233
hospital, New York State, 81
hospital on North Brother Island, 177
hospital, opening of, 277
human and bovine, 1278
impressed with the cure of, 800
incipient pulmonary, 542
infection in, 319
in our public institutions, 927
intestinal and respiratory, 330
in the south of Ireland, 220
investigation, 1092
is milk a factor in the spread of? 620
laryngeal, 1085
laryngeal, and pregnancy, 272
miliary, from middle ear through sigmoid sinus, 326
National Association for the Study and Prevention of, 1044
of the abdominal lymph-nodes, 887
of the gastro-intestinal tract, 762
of the lungs, a factor in the causation of emaciation in, 739
of the nervous system, 43
of the prostate, 666
of the testicle, treatment of 130
Ohio State sanatorium for, 1188
open-air treatment, 565
pamphlet on, 179
problem, city takes up, 1233
portal of entry of, 171
present-day treatment of, 455
pulmonary, early diagnosis of, 937
pulmonary, history-taking in cases of, 550
pulmonary, infusions of, 302
pulmonary, some common errors in the treatment of, 753
pulmonary, the early physical signs of, 721
pulmonary, the general principles of management of, 620
races and peoples with regard to, 917
renal, early operation in, 234
sanitarium at St. Louis, 515
serum treatment for, 514
State hospital for, 28
surgical, 861
talk at Portland, 84
the use of bisulphide of carbon in the treatment of, 753
vaccination upon tuberculous cattle, effect of, 1270
Tuberculous patients, campaign in behalf of, 753
tissue, chemistry of, 649
Tuck, Dr. Henry, the late, 1046
Tumor, adrenal, with metastases, 93
brain, with progressive blindness, 46
of the frontal lobe, 46
of the spinal cord, a case of, 625
Tumors, elastic tissue in, 76
malignant abdominal, 998
of the cerebellum, 761
of the chiasma and an operation for their exposure, 315
of the hypophysis, relation between acromegaly and, 76
of the ovary, papillary, 37
the circulatory system in relation to the curability of, 260
the inorganic constituents of, 704
Türck, Dr. Raymond, Custer, appointment of, 894
Tympanites, 761
Typhoid again increasing, 514, 605
bacilli, agglutination of, by other bacteria, 24
bacilli and salt water, 571

Typhoid, circulatory organs in, 576
epidemic near Jerome Park reservoir, 322
epidemics in Pennsylvania, 753
epidemiology of, 318
fever and oysters, 571
fever, scarlet fever and diphtheria by milk, conveyance of, 468
germs, vitality of the, 519
in Albany, 702
in the navy, 226
laparotomy in, 1228
notification in Ontario, 800
relation of some other bacteria to, 171
situation, 562
threatens strikers and strike breakers, 371
versus copper, 843
vessels in, 576

ULCERATION, appendicitis complicated by duodenogastric, 750
Ulcer, chronic gastric, the pathogenesis of, 599
gastric, 1128
gastric, complications and sequelæ of, 682
gastric, orthoform in the diagnosis of, 692
gastric, symptomatology and course of, 691
gastric, the condition of the blood and urine in, 675
gastric, the incidence of, in America, 673
gastric, the pathological anatomy of, 677
gastric, treatment of perforating, 1177
of the duodenum, 36, 604
of the stomach, 508
typhoid, diagnosis and treatment of perforating, 316
Ulcers, chronic, rubber tissue and boracic acid in, 125
of the cornea, 520
Umbilicus, metastatic melanosarcoma and adenocarcinoma of the, 952
Uncinariasis in North Carolina, 978
observations on the blood and circulation in, 641
University and Bellevue Medical Schoool, the, 655
gymnasium, endowment of, 1233
of Pennsylvania, 226, 702
of Pennsylvania Medical Society, 946
of Pennsylvania notes, 1138
of Vermont, 227
of Vermont buildings 607
Urea excretion deficient, in gout and lithemia, 21
Uremia, to avert, 1200
Ureter-cystoscope, the F. Tilden Brown, 1003
treatment of a third, 125
Urethra, plastic surgery of the, 864
repair for large defect of, 331
strictures of the, 904
Urethritis, 138
Urethrotomy, a modification of Syme's staff for external, 666
Uric acid, endogenous, the elimination of, 1033
acid, the effect of alcohol upon the excretion of, 646
Urinary bladder, a new method for radical operation for malignant disease of the, 137
passages, aseptic catheterization of the, 406
stones in Egypt, size of, 938
Urine, action of formalin on, 75
albumin in, 836
a simple and accurate method for estimating sugar in the, 454
Urine in fatigue, the toxic haracters of the, 171
intravesical separation of the, 315
lipase in the, 121
of nephritis, fat in the, 622
suppression of, 36
the segregation of, 367
tubercle bacilli in, 1131
valuable suggestions from the inspection of, 409
Urotropin and helmitol, 649
in scarlet fever, 406
Urticaria, treatment of, 1038
Uterus, abscess of the, 24
fibroid tumors of the, 41, 663
retrodisplacement of the, 760
retroflexion of the, 474
retroversion and retroflexion of the, 1009
rupture of the, 165, 611
the implantation of the human ovum in the, 41
Utica, St. Luke's Hospital, 752

VACCINATION and the law, 262
compulsory at Colon, 607
law defective, 1043
of school children, 1232
popular in Montreal, 998
to enforce, 322
Vaccine virus, 998
virus in Massachusetts, 293
Vagus, motor function of the, 622
Vale, Frank P., the early diagnosis of Pott's disease, 160
Validol in seasickness, 382
Valves, aortic pathology of the, 269
Vanderbilt ward open, 1269
Van Gieson, Ransford E., infant feeding and milk modification, 923
Vaughan, George Tully, an analysis of 25 cases of strangulated hernia treated by operation, 1215
Vennin, anticrotalus, 170
Ventricle, right, hypertrophy of the, 710
Verruca senilis, 237
Version in primiparæ with narrow pelves, 165
Vickery, Herman F., and Oscar Richardson, three cases of probable psittacosis, 780
Vineberg, Hiram N., sterility due to abnormal conditions of the uterus, 54
Vineberg, Hiram N., the effect of hysterectomy on the sexual function, 1249
Vogel, Karl M., quantitative albumin determinations, 411
Vomiting, pernicious, 761
Voorhees, I. W., some notes on a case of erythromelalgia, with treatment, 737
Volvulus in the stomach, 235
Vulvovaginitis, epidemic, in infants and children, 812

WAGNER, Charles G., feigned insanity, malingery revealed by the use of ether, 969
Wald, Dr., appointment of, 606
Waldeck-Rousseau operation, the, 470
Wallace, W. L., extra-uterine pregnancy—some observations in a case ruptured by examination, 157
Ware, Martin W., moot points in the treatment of fractures, 309
Warning against "Walk in" signs, 843
Warren, Food Commissioner, report of, 226
prize, 84
Warts, multiple, 1132
Water anesthesia, 478
discussion on the purification of, 655
Water filtered for West Philadelphia, 178
in disease, value of, 221
pure, to keep city, 798
purification, 1246
supply, public, improvement in the, 468
Watershed control, legal aspects of, 573
Waters, pollution of inland, 1140
Weather observations in the Adirondacks, some, 341
Webster act, 573
Weightman fortune, basis of the, 514
Weiss, Ludwig, contribution to the pathology and treatment of acute gonorrhea, 486, 535
White Haven Sanatorium, 1089
Whitman, Royal, the distinction between fracture of the neck of the femur and epiphyseal disjunction in early life, with reference to its influence upon prognosis and treatment, 584
Widal reaction, technic of, 170, 1245
test not conclusive, 480
Wile, Ira S., laundry hygiene, 1065
Wile, Ira S., valuable suggestions for the inspection of urine, 409
Wiley, Dr., address by, 945
Williams, J. J. Gurney, some interesting obstetric experience, 290
Williams, William R., colloids and ions, 928
Wills' Hospital Ophthalmic Society, 569
Wilson, J. C., a case of enteric fever complicated by polyuria, 961
Withington, Charles F., Addison's disease, with and without adrenal tuberculosis, 591
Wright, Jonathan, the theory of mutation in its relation to medicine, 49
Woelfel, Dr., resignation of, 1138
Woolsey, George, a case of tumor of the spinal cord, 625
Woolsey, George, the relations of surgery to the recent advances of the knowledge of the pancreas, 97
Woman, the antiseptic treatment of the puerperal, 1258
Woman's Hospital widens scope, 753
Medical College, 563
Women in medicine, 1271
Wood alcohol, 706
alcohol finds, 892
Wood, N. News, arrest of, 844
Wood's footsore Moros, 1247
Wool, radio-active, 516
World's Fair Emergency Hospital library, 29
Wounds, bullet, 509
from Japanese small arms, 607

X-RAYS, reaction after the use of the, 121
X-ray therapeutic use of, 953
therapy, 521
the uses of, in medicine and surgery, 360
treatment of leucemia, 464
treatment of skin and glandular diseases by, 718
value of the, 1129
value of the, to the general practitioner, 810

YALE medical graduates, 84
Yellow fever epidemic, no, 1271
fever expedition, another, 895
fever in Cuba, 1046
Ye olden time doctor, 421
Yohimbin, 61
Youth, the secret of perpetual, 132

ZOOLOGICAL pitfalls, 1136
Zymase and endotryptase in killed yeast cells, the activities of, 793

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